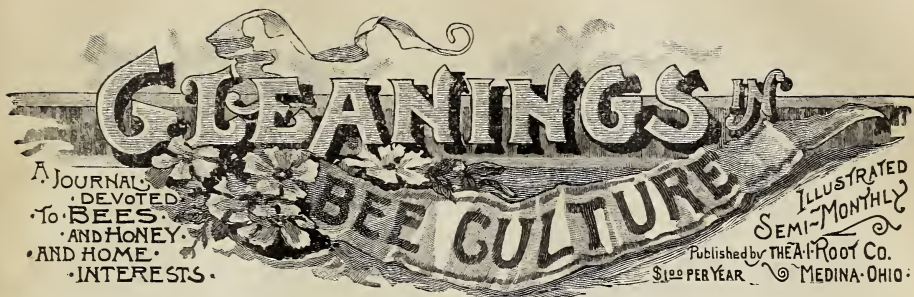


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GLEANINGS OF THE BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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No. 23.

STRAY STRAWS

FROM DR. C. C. MILLER.

GOOD SLEIGHING Nov. 13.

LE PROGRES APICOLE gives 18 lbs. as the minimum winter stores in France.

"SPEAK ONLY good of the dead" is not a bad maxim; but some make it, "Speak good, only of the dead."

"I HAVE KEPT green fruit in jars for a season by sealing tight with beeswaxed cloths."—Mrs. Atchley, in *A. B. J.*

Nov. 9. Snow $3\frac{1}{2}$ inches deep on my hives. Won't I wish they'd been in the cellar if they don't get another flight? *Later*.—They didn't get it.

FUMIGATION with sulphur is a good thing for a bee-cellar—of course, before the bees are in; and don't fumigate the people if any live over the cellar.

AN APIARY of 30 colonies, kept in the city of Chicago by Mrs. S. M. Brooks, gave a crop averaging \$12 per colony, mostly from sweet clover.—*A. B. J.*

"IT IS BECOMING apparent that hives should be sized according to good and poor seasons rather than poor and better localities."—C. W. Dayton, in *Review*.

THE *Revue Internationale* occupies the whole of its October number with a sketch of the life of Francis Huber; and an interesting number it makes too.

I DON'T KNOW the answer to Bro. Poppleton's question about bees propolizing late in the season. I've also known them to put big daubs of glue at the entrance, which rather looked as if meant for warmth.

GOLDENROD, says J. K. Goodrich, in *A. B. J.*, yields well in moist localities, but not on dry ground. He says, when abundant in the hives the odor is such that a novice might mistake it for that of foul brood.

CELLARED my bees Nov. 20. They had gone through two hard freezes, with thermometer 7 and 10° above 0, and ought to have had another fly; but it was too risky to leave them out longer. I wish they had been put in Nov. 1.

EGYPTIAN BEES have the reputation of being cross. F. W. Simond writes from Alexandria to *Revue Internationale*, that, on their native soil, they are very gentle; but taken to Europe they become vicious, as do animals of larger size.

DOOLITTLE says, in *A. B. J.*, that winters are gradually becoming harder on bees, and thinks that, by the year 2000, nearly all if not all the bees north of 40° will be cellared. But he much prefers a special bee-cellar with no building over it.

IN SWITZERLAND large numbers of bees died, death being attributed to fine dust or rust on pine needles getting into the breathing pores of the bees while working on the pines. Could that explain some of the unexplained cases in this country?

RAMBLER, on p. 868, handles the term "frog-eating" very gingerly, fearing to show disrespect. If he has ever tasted the hind quarters of a "bloody-noun," well fried in butter, and concluded he didn't like it, I've a good bit of "disrespect" for his taste.

BRITISH BEE-KEEPERS have two kinds of conventions. The one seems to be chiefly a business meeting. The other they call a "conversazione," which hasn't the least shadow of a program, but is taken up with solid bee-talk. Reports of the latter are very interesting.

THE REPORT of the convention at St. Joe, so far, in the *American Bee Journal*, is unusually full. Even for those who were there, it will be interesting to read it over. So much is crowded into two days that we can't remember it all; so in reading the report, much of it comes as new.

EDITOR YORK says the editorial "we" seems more natural than "I." Some very bad things are natural. He says "I" is sometimes egotistical, but "we" isn't. Tut, tut, George! is there any thing very modest in a man's feeling

so big that he thinks he's more than one person? I'd like to see just one good reason for saying "we" when you mean "I."

H. GUEHLER, a prominent German honey-dealer in Berlin, keeps in front of his retail honey-depot an observatory hive, which attracts attention and noticeably increases sales. Four such colonies are kept in his apiary so as to change off, each one being confined only half a day at a time.

ARTIFICIAL HONEY is reported in Bavaria, of such composition that "chemical analysis has not detected any thing differing from the honey of the bees." But the *B. B. J.* wisely comments, "The composition of leather and meat are almost identical, but one would hardly relish the one as well as the other."

MRS. HALLENBECK introduced a queen after this fashion: Shook a lot of bees in front of a hive supplied with combs, sprinkling the bees with thin syrup, then dumped the queen among them, letting all run in the hive. Of course, I suppose the hive was on a new location. Now just say why that isn't a real good plan.

MRS. HALLENBECK says, in *Progressive*, that the percolating plan of feeding with tumbler and saucer has been used by her ever since she fed bees. Mustn't keep things to yourself, sister H. [I wonder if she knew she had struck on to a really good thing. If she did, why did she keep it under a bushel? Dear me! I wonder if there is any thing new under the sun.—ED.]

THAT TABLE of Cogshall's, on p. 865, while very interesting, doesn't prove any thing. If he would be kind enough next year to put the ten-frame hives in the different apiaries side by side with the eight-framers, it would help no little to decide between the two kinds. [I don't agree. I think it shows pretty well that there is not so much difference between the eight and ten frame hives as many suppose. Of course, it would have been better if the two kinds of hives had been in the same yards; but even as it was, if the ten frames are really better they ought to have shown some *slight* evidence of it in the table. The eight frames seem to hold their own every time.—ED.]

HERR REEPEN, in *Centralblatt*, mentions the testimony in GLEANINGS as to bees moving eggs, and says it may be like some other supposed facts that were firmly established and afterward found to be not facts but errors. He thinks the exceeding tenderness of the outer coating of the egg makes transference impossible. [If man with his clumsy fingers can transfer eggs successfully, and good queens result therefrom, it seems to me the bee can do it. The accumulated evidence that it does do it is quite conclusive. The coating of the egg is very tough, as I have found in dissecting for the microscope. If it will resist the manipulation of man, it certainly will that of the bee.—ED.]

THE MAN who tells all about his failures may do as much good as he who tells of his successes. How much time we might save if we could know, without trying, that certain things would only end in failure! [Yes, indeed. We will gladly open our columns for the telling of failures. Many a scheme we may pet for years, and, when a favorable opportunity comes, try it only at a great loss. If a few of these pet schemes were shown up, not as they appear in beautiful and enticing theory, but in actual practice, it would save many another good brother bee-keeper dollars. The knowledge of what others have done, even though it resulted in failure, is invaluable to the fraternity at large. Come, brethren, don't be too modest.—ED.]



THOSE ESSAYS AT THE ST. JOSEPH CONVENTION.

A REPLY TO W. Z. HUTCHINSON: THE VALUE OF CAREFULLY PREPARED PAPERS FOR CONVENTION PURPOSES; CONVENTIONS FOR ADVERTISING BEE-KEEPING.

By Emerson T. Abbott.

"There was one mistake (?) made in getting up the program, and I am not sure but it is a worse one than that of having no program at all. . . . I have reference to the securing and reading of long essays descriptive of bee-keeping in foreign lands. . . . We can not afford to travel hundreds of miles to listen to what we can just as well read in the bee-papers."—W. Z. Hutchinson, in *American Bee Journal*.

Friend H. puts this as though there could not be two sides to the question; and as I was the one who conceived the idea and secured those papers, and as I am just as certain that there was no mistake made in so doing, I want to have my say.

There is but one reason given why such papers are a mistake; and that is, one can not afford to travel hundreds of miles to listen to what he can just as well read. If this be true, then there is no use of having a convention at all, for it is just as easy to ask and answer questions in the papers as it is at a convention. Do not the bee-papers do that very thing in every issue? It is all very well to take up some of the time, but not all of a convention, by such questions as, "Which is the best smoker?" "Which is the best queen—one with a body all yellow or one with a tip of black at the end of her tail?" "Can you cut sweet clover for hay just as it comes in bloom, and then let the stock keep it eaten down so it will not bloom any more that season, and yet the bees be able to gather a bountiful crop of honey from it?"

Now, friend H., and all the rest of the people who seem to think the sole aim of a convention is to ask and answer questions, could read the answers to all of these questions in a paper just as well as to have them given *viva voce* in a convention; and, further, the answers are more likely to be to the point.

If one will stop and think for a moment, he will see that this talk about taking the time of a convention is a fallacy. What is the time of a convention for, any way? and what is the purpose for which conventions are held! The real end in view is, or should be, the promotion of the best interests of bee-keeping throughout the land. I hold that such papers, occupying only a small part of the time of the convention, as they did at St. Joseph, do as much, if not more, to promote the general interest of bee-keeping as any other part of the exercises.

Conventions are not held for the sole information or enjoyment of the people who attend them. There is always a larger audience to be had in mind, and whom we should be just as anxious to reach. Bee-keeping depends in a great degree on this larger audience for its prosperity. In fact, its life depends upon the attention and patronage this larger audience may give to the products of the industry. The trouble with some conventions is, that the whole program seems to lose sight of the general public, and they either resolve themselves into a mutual-admiration society in the interest of a few, or else become an automatic question-box to satisfy the latent egotism of those who have an unconquerable desire to ask questions in order that they may have a chance to answer them, flattering themselves all the time that they can answer them a little better than any one else. All questions are not asked for information.

Then if it were not for these carefully prepared and interesting papers, I apprehend that the general public would know and hear but little about our meetings. The papers of St. Joseph gave large space to the doings of our association; and what was the principal matter that entered into the make-up of their articles? Why, these papers that friend H. says were a "mistake." If I mistake not, the papers would not have given half the space or attention to our industry if this "mistake" had not been made. In fact, there would have been but little of interest for a daily paper to publish had they not been read. No one will argue for a moment, I presume, that we could have gotten these papers published in the daily papers if they had not been read at the convention. Then, again, I am not so sure that the parties who furnished the papers would have written them for any of the bee-papers. I am quite sure they would not without pay. This is not all. These papers are being copied by other journals, and so the influence of the North American is still going on, and will go on as long as any of the essays

are in print, and are being read by the general public.

This answers another statement made by friend H., that it does not pay to publish the notices of our meetings in the agricultural journals, because the people who read them will not come. What of it? The thing we are after is, to let the people of the continent know that there is such a thing as the North American Bee-keepers' Association; and then when we want a favor of the railroads, or Congress or a State legislature to pass a law for the protection or promotion of our industry, we shall not be asked, "What is this, any way?" or be further greeted with the remark, "I never heard of it before!" I presume friend H. believes in advertising, to say the least, and I am sure this kind of advertising will pay in the end. I venture to say that there are some people in this country who have a realizing sense of the importance of bee-keeping who had never heard of the North American Bee-keepers' Association one year ago.

I took special pains to have the Board of Agriculture of our State know that there was such an association in existence; and more: I saw to it that the secretary of said board had an earnest and urgent invitation to attend our meeting. I am sure this will be of great benefit to our industry in Missouri, if not in the entire country. All of this advertising helps to sell honey, and selling honey is of about as much importance to the bee-keeper as any thing of which I know.

In conclusion I will say I do not think it is a mistake to have some well-digested essays read at the North American, neither do I think it time and money spent in vain to advertise the meetings in the agricultural journals. The more of this the better it will be, as I see things now.

St. Joseph, Mo., Nov. 17.

[At first I felt as Mr. Hutchinson expressed himself; but the more I think of it, there is much truth in what you say. I would especially emphasize the fact of the great good that can be accomplished in having our conventions advertise the honey business. Even if the notices in the agricultural papers do not help the attendance, it lets farmers and everybody else know that bee-keepers are alive and doing; and when they see the great stacks of honey on the market, instead of jumping to the conclusion that "it must be adulterated, for the bees could not produce so large an amount," they may think differently. Yes, indeed, bee-keepers should avail themselves of cheap advertising; that is, there is hardly an agricultural paper but would be glad to publish notice of any bee-convention, free of charge.]

Regarding those essays, I have known for some time that we might help the general public to a better understanding of our industry, providing we help the reporters of the great dailies to get material regarding the convention. If it is all off-hand talk, they are pretty apt to put in little or nothing, and even that so garbled as to be worse than nothing. Well, then, if they are handed papers that are read,

they can publish *so much* that will be presented to the general public in a form acceptable to bee-keepers.—Ed.]

RAMBLE 121.

GETTING CLAMS, ETC.

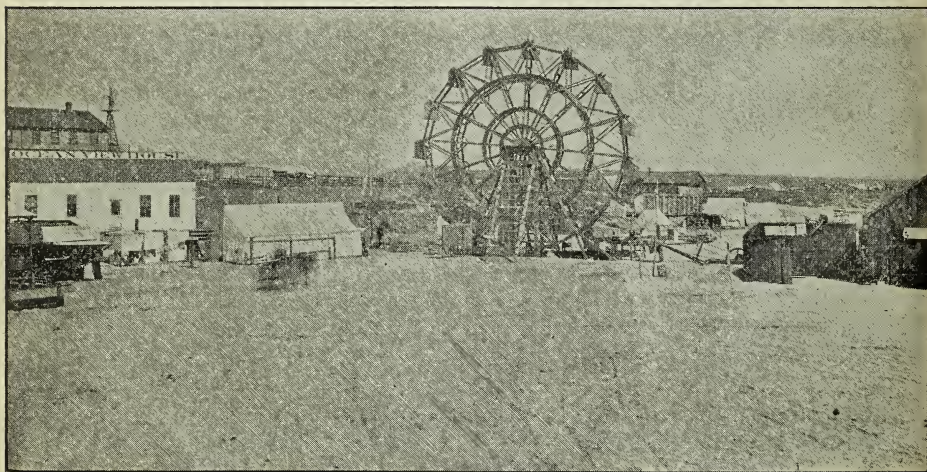
By Rambler.

Mr. Hilton is about the only bee-keeper of any account near Los Alamos. He has only one fraternal competitor, and that is a German bearing the name of Kisswickeder; or if I have not got it right, it sounded as above. Mr. Hilton drove me out in his cart one forenoon, and we found the apiary and residence of our German bee-keeper, but we regretted to find the owner absent. The hills were very tame around this apiary, and there was a plentiful supply of bee-pasturage; but it was nearly as retired a place as the spot in the Zaca Mountains where

cultural career, owned 200 colonies; but at the time of our visit it was reduced to 80 colonies; and, like Mr. Hilton's bees, these were surely getting honey; and I afterward learned that he got a ton or two of surplus honey. Long may the name of Kisswickeder wave!

Our sojourn in Los Alamos, however, terminated. We regretted to leave so kind a friend behind as Mr. Hilton. His generosity broke forth one morning in bringing to our camp a roll of butter and a can of honey. For many days thereafter we audibly ejaculated, "May the shadow of Hilton never grow less!" I did not regret, however, to leave those various-hued babies. The last thing I discerned distinctly, as we rolled out of Los Alamos, was one of those juvenile faces with a squall spreading rapidly from the mouth to the ears, getting ready, as I opined, to have its picture taken.

Bro. Wilder, I know, had some regrets at leaving, for some of those bright-faced Spanish



PISMO BEACH.

Mr. Hilton wished to locate the Rambler. Our German lived the happy life of a bachelor in this retired spot, and his little cabin was characteristically German in its surroundings. A great variety of flowers, roses, etc., dotted the lawn, and many rare varieties of trees and shrubs were growing, among which Mr. Hilton pointed out a tea-tree. A tall pole bore upon its summit a dove-cote, in which a numerous flock were cooing their love-notes. Evidently, in the absence of dog or cat, our friend found much companionship in the feathered creation, as well as with his bees. Another evidence of German occupation was an empty beer-barrel, and several bottles marked "Lager" or "Rhein Wein." The pipe, also, solaced the German.

A short distance from the cabin we saw the busy apiary. Mr. K., at one period in his api-

señoritas tugged hard at his heart-strings; but deer-hunting ahead had greater attractions, and he tore himself away.

In Santa Maria we made a brief halt, and then pushed on into the (to us) unknown country beyond. A little beyond the town we forded the Santa Maria (Mah-re-ah) River. The ford was over a mile across, and not a drop of water in sight. This, too, was one of those riv- that are bottom up, which we find so often in this country. The sand was, however, worse to ford than water would have been, and our ponies needed to rest quite often. This sand ford is not only toilsome for horses, but a terror to the rider of the wheel. We learned from a cyclist that it is the only place in all the journey from San Francisco to Los Angeles, over 500 miles, where a wheel will stand alone upright

in the sand. We remarked to each other that we should like to see A. I. Root sweating through that spot—not that we wish to inflict punishment upon him, but we thought it would be good for his liver: and, besides, if it proved too hard for him we could lend a helping hand with our sturdy ponies. See?



"GOT ONE, WILDER?"

Our ponies struck off at a rattling pace upon the hard road after we left the ford; and that night and the next day, Sunday, we quietly camped within a little distance of Los Berros. Monday it was through Arroyo Grande, a thriving town. Here we deflected a little from our route, and again sought the shores of the Pacific at Pismo Beach. In all our journey from Los Alamos we learned of only one bee-keeper, and he was such in a small way, we were informed. The country was largely a grazing region, and there was no visible pasturage for bees.

Pismo Beach is quite a famous local summer resort, and is noted for good fishing, and, above all, for the immense number of clams that can be dug from the sandy beach. Ranchers and their families come here with their tents and cooking-utensils, and live for weeks, bathe in the surf, dig clams, eat and sleep. This camping on the beach is a dull, prosy, and lazy life. The ranchers say they can live cheaper there in the summer months than they can at home; and the change is agreeable to their families. We found the usual attractions here—skating-rink, dance-halls, and an imitation "Ferris" wheel; but the attractors all declared that it was dull times for them, and no money to be had. We spent a night and a portion of a day here; saw the loading of vessels with thousands of bags of asphaltum, which an extensive mine back in the hills supplied; visited the chalky cliffs, and explored the caves where many others had trodden before us, and enjoyed the dense wet morning fog. It is early in the morning, when the tide is out, that the harvest of clams goes on. The residents of the canvas village go out barefoot, with trousers rolled up above the knees, armed with shovels, stout

sticks, or even a strong knife, and then get down close to the surf, and dig. I armed myself with a butcher-knife, and a little digging in the wet sand unearthed a large healthy clam; a little more digging, and another. I soon had two dozen, which was enough for our needs, and I left the ranks of the diggers. Pismo Beach

with its lazy aspect we left behind us, and remember it as a place we have seen.

Our journey was again into the interior, and San Luis Obispo our objective point. Our day's journey was enlivened by passing through a number of little valleys made fertile by life-giving springs of pure water. In these valleys a variety of farm products was cultivated, and the acres of corn, potatoes, and alfalfa, and the neat cottages, gave evidence of thrifty communities.

In the suburbs of San Luis Obispo we saw quite an apiary of box hives; and after we had become thoroughly established in camp in one of the public parks, I took an evening stroll out to said apiary, and found that it was owned by a German, and, in connection with his apiary, he worked a cemetery. A person can not be expected to be up with the times, perhaps, whose mind is so



"VOS YOU VON OF DOSE DEMBERANCE GRANKS?"

mixed up with grave-digging, and with the departed glories of many families; his mind must needs have a "retrospective glance;" and it

was proved in this case by the condition of the apiary, which loomed up in fine style in box hives.

It was just my luck, as I entered the capacious front yard, to have three rotund women enter ahead of me, and completely surround and take the attention of the cemetery cultivator. His wife was, however, at hand, and with palpitating gall I addressed her.

"Madam, can I buy some honey of you?"

"No," says she, "ve haf none. Dose pees makes no honeys dees yahr. Odher yahr ve haf so much."

"How many hives have you?"

"Ve haf a goot many hifes; may pe thiridy; may pe thiridy-vive. Ve haf so much honeys last yahr. Ve haf more as much hives and honeys as apodies all ofer dees goundry."

"From what source do your bees gather honey?"

"Vat zorse? zorse? Mein cracious! de pees don'd vork on zorse. You tink pees, like flise, vork on zorse? No, mein cracious! zorse! Our pees vork flowers, posies, roses. Ve haf flowers, posies, roses, for pees to vork on from von ent of de yahr to de odher ent. Zorse! Mein cracious!"

I apprehended that the good lady had misunderstood my question; and as I find it no use to argue with a woman I proceeded with the next question. Said I:

"Ma'am, do you secure your honey by means of sections, or do you Hruschka it?"

"Vat is dat you means? You means ve visky it?—visky dose nice gomb honeys? No! Vat you dinks ve run a peer-garten, a visky-zaloon? No, mein cracious! Vat you dinks! Mein huspant, who vorks on de cemetery all day, viskies his honeys! No, mein cracious! Vat vas you, anyvays?—von of dose demembrance granks vat sees visky in de moon, in de stars, in de deep vell of vater, in our honeys?"

She raised her voice and shouted to her husband, "Hans Blinkenhoffer, gome here! here vas a visky grank."

Hans was, however, still surrounded, and I bade a hasty good-night and retreated in good order, resolving not again to interview foreign people too closely in relation to the honey business when they are so far behind the times in their knowledge of it. To turn his little crank on posted people will hereafter be the duty of the Rambler.

A CHAT ON EUROPEAN MATTERS.

SOMETHING GLEANED FROM FOREIGN BEE-JOURNALS CONCERNING THE JOURNALS THEMSELVES.

By Charles Norman.

[We may explain to our readers, that the following articles by Mr. Norman are of the nature of Dr. Miller's Stray Straws, being compiled from *La Revue Internationale* from January to June inclusive. We believe they will

be found to be of great interest as showing what is going on in that portion of the world—France and Switzerland. Mr. Norman is thoroughly informed on all that has been printed in the French language relating to our pursuit, and is, we have every reason to think, a careful and judicious observer. Two more articles will follow this.—ED.]

La Revue Internationale d'Apiculture (The International Review of Apiculture) is a monthly, written in French, and edited by Mr. Edouard Bertrand at Nyon, a city in the French part of Switzerland. It is not confined, though, to the latter section or province, but circulates wherever the French language is spoken or read—in France, Belgium, Alsace, Lorraine, Italy, Canada. It has some subscribers even in Chili, India, Cochín-China, Australia; a correspondent from Merrylands, N. S. W., is quite happy that his attention has been directed to the *Revue*, and writes: "Hitherto I had not read any but English bee-papers—GLEANINGS and *The Bee-keepers' Review*—two excellent journals; but how I longed to read my favorite subject, apiculture, in French!" The *Revue* is also well patronized by Swiss, French, Italian, Austrian, and German advertisers. Among them I notice the name of one of your correspondents, Mr. Ph. J. Baldensperger, who now resides at Nice, France. There is an advertisement by a French ladies' firm who evidently mean business, for they make this quite timely remark: "Letters not accompanied by a stamp will not be answered."

The *Revue* well deserves all this patronage, for the leading articles are interesting and well chosen, as Mr. Bertrand understands both English and Italian; and as some of his contributors understand German, the foreign bee-literature receives due attention. The editorial remarks regarding bee-matters are fully up to the times. A good many reports and condensed correspondences are given; the readers are kept posted concerning bee-keepers' meetings, etc.

The French, you know—the better class of them—have very pleasant manners, and "French politeness" is a word that tells a good deal. Well, the *Revue* is in full harmony with that tone, and there is hardly a page of the same but shows it more or less. Now, by this I do not, of course, mean that our American bee-writers lack courtesy. On the contrary, the great majority of them are all right in this particular; but are there not a few—just a few—with whom it is no pleasure to differ, and who, in their fancied infallibility, come down on every opponent as if he were a most despicable fool who could not be castigated enough?

Mr. Bertrand has also written a book, "*La Conduite du Rucher*" (The Management of the Apiary), which, to judge by a few excerpts that are cited in the *Revue*, must be quite a thorough and commendable work. It has reached its seventh edition. In fact, there is no want of French bee-literature; and any Frenchman

who feels like becoming a bee-master can find enough books, pamphlets, and periodicals to satisfy his needs.

There is a French bee-paper published even in Africa—*Nahhla* (the Bee), an organ of the society of the Algerian apiculturists, and edited by Dr. Reisser. "the high skill of whom in apiculture is well known."

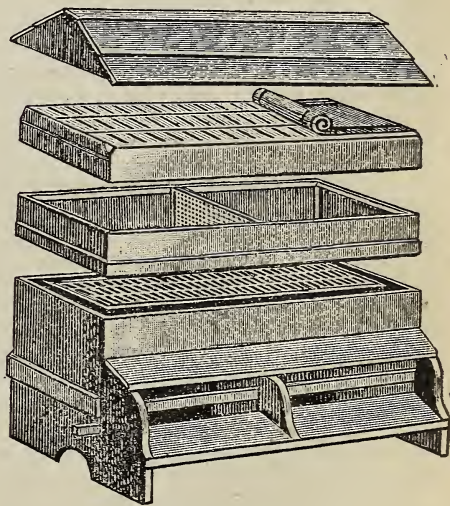
Among the books are translations of Mr. Cowan's "Guide," and Mr. Dadant's "Revised Langstroth." Mr. Charles Dadant is a contributor to the *Revue*, and his articles are well written—indeed, the emanations of a mind which combines fine judgment with great experience. He is held in high esteem by the editor of the *Revue* as well as the other contributors. When mentioning his name they do not spare words like "master," "celebrated," and the like, and they are quite proud of Mr. D. being their fellow-Frenchman. In fact, in bee-matters he is, to all appearance, the authority with them. The French, like any people, may have their faults, but they are far from participating in that hypercritical vein which characterizes some other nations; and whenever one of them has worked himself up to celebrity they acknowledge it without jealousy, and treat him with that respect which is due him.

The French language has some quite happy expressions. For instance, "la ruche" means hive; "la ruchée," colony; "le rucher," apiary—all words that are based on the same root. "Les fixistes" are those bee-keepers who use gum, skep, or box hives; "les mobilistes," those who use hives with movable frames—two words we well might adopt. "Le bourdon" means the drone; and when a queen is a drone-layer they call her "bourdonneuse;" so a colony or a hive which has either such queens or fertile workers is called "bourdonneuse" or "bourdonneux." Could we not likewise use the short word "dronish" for such queens, colonies, or hives? The French bee-keepers (also those of the other continental nations) do not call each other "friend" or "brother" or "sister," as is customary over here. With them these words mean a great deal, and people there are very careful in addressing another person by such a name. Therefore they call each other "colègues (colleagues), thus indicating that it is a like pursuit that connects them.

In France and Switzerland, bee-keeping is not so advanced as in the United States, the number of the fixists* being much larger there; yet the mobilists, by incessant private as well as public agitation, are gaining more and more ground. There are, however, several departments of France—even Mr. Bertrand admits it—where the box hive is preferable. Reason: "the honey is mediocre, red, thick, and so gummy

and dense that it separates from the wax with the greatest difficulty. In order to extract it, it is absolutely necessary to break the combs. Its sale is difficult, and one does not like it, even where it is produced. Its shipment is very troublesome and painful (on account of the geographical condition of the country), and its price is very low." Therefore the production of honey does not pay there at all, while the production of wax does, the latter being excellent, and selling at a good profit.

Of the hives with movable frames, the two most used are the Dadant hive—either pure or more or less modified—and the Layens hive. There are also in use the Langstroth, the Cowan, the Sagot, the Burki-Jeker, the Berrichonne, the Wells, and other hives—quite a symposium, it seems, to suit the most divergent tastes. As no description of those unknown to us is given, I can not enter into any discussion of their respective merits and demerits; but perhaps the one or the other of them contains a feature or features we could add to our hives, and so it might be worth while for us to inquire into this matter a little.



THE WELLS HIVE.

The Wells hive is of English origin (unless it be an imitation of that renowned German bee-keeper Dr. Dzierzon's twin hive). What it is, Dr. C. C. Miller told your readers in *GLEANINGS*, Aug. 15, p. 643. I send you an engraving of it, which you may copy, and which explains the whole plan sufficiently. The correspondents of the *Revue* are divided as to its merits. Some are pleased with it, some displeased, and the last word has not been spoken yet.

Over two pages of the *Revue* are devoted to an article of Mr. Dadant, on the Layens hive. Mr. Fourcassé, the secretary of "La Société d'Apiculture du Tarn," had, in a bulletin of the same, remarked that Mr. Layens' methods were

*Those who use skeps or hives without frames, in contradistinction to "mobilists," who use movable frame hives.—ED.]

permeating America, and so on, and Mr. Dadant now deals pretty severely with the poor "feller" for this error. He says that, if this hive or method were in use in the United States, either Mr. Doolittle or Mr. Root and his co-workers must have known it; but Mr. Doolittle, in answer to a correspondent of GLEANINGS, confessed his ignorance of it, and Mr. Root has not given any light either. By the way, Mr. Dadant believes in rendering "honor to whom honor is due," for he calls Mr. Doolittle "one of the apiculturists who are best posted regarding what is going on in apiculture in the United States," and relates that Mr. Root selected him for answering questions asked by the subscribers of GLEANINGS, "because he writes for all apicultural journals of America, and nobody knows the different systems employed there better than he." In a footnote Mr. Bertrand mentions Dr. C. C. Miller as being "one of the most prominent bee-keepers of the United States, who still, in 1893, had been president of the North American Bee-keepers' Association," etc., and "who, besides, is thoroughly posted regarding the matters of France, as he reports to GLEANINGS on foreign publications," and then, to show that even *he* (the doctor) has not the least idea of what the Layens hive or plan is, quotes his—yes, *his* (the doctor's) own description of the Layens method in *Stray Straws* (GLEANINGS, p. 151)! A little bad for the doctor, is it not? But never mind, doctor, for, you know, *quandoquidem bonus dormitat Homerus*. Well, Mr. Dadant goes on to say that the Layens frame originated in the United States. A few years after Mr. Langstroth had introduced his frame, "Homer King, of New York, desirous of selling hives, tried to run opposition to Langstroth, stealing his invention" (Mr. Dadant's own words); "but, lest he be accused of having stolen it completely, he made frames *deeper than wide*, of about 31 by 37 centimeters." After his arrival in the United States, Mr. Dadant, who had never before seen any frames like Mr. Langstroth's, viz., wider than deep, adopted the King frames for his hives, and described these hives in a French journal as his favorite hives. Mr. Layens, copying Mr. Dadant, introduced said frame in France. Mr. Dadant, however, as well as the other American bee-keepers ("the American is practical above all, his chief question being the profit," says Mr. Dadant) came afterward, by comparative tests, to the conclusion that the wide frame is preferable to the deep, and thus discarded the latter. In conclusion, Mr. Dadant, shuddering at the thought that his French countrymen might suspect him of having been morally infected with that most dreadful of all human creatures, the Yankee, begs the reader to believe that *his* preference was by no means based only on the question, "Which is the best *paying* frame of the three (deep, square, low), that are in use here?" I still remark that the

Layens hive is a large one-story hive with 20 frames; and Mr. Bertrand's opinion of it is, that its management is somewhat "simpler" than that of the hives with upper stories, and that, therefore, this hive suffices for the small bee-keeper, for persons who desire to produce honey solely for their own use, but that it does not fit "the very producers who wish to draw all possible profit from their apiaries."

St. Petersburg, Fla.

To be Continued.

WINTERING BEES IN DUG-OUTS.

PLAIN DIRECTIONS ON HOW TO MAKE A GOOD, CHEAP, AND SERVICEABLE REPOSITORY.

By John Handel.

Those who have not yet solved the wintering problem for themselves, and have a place that is well drained for their apiary, might try my plan, which I have successfully practiced for the last ten years. But before I go any further I will describe the location of my apiary.

It is on the south side of a rather steep hill; soil loose and sandy. Whether all or any of these conditions are necessary or not, I can not say. But one thing I am quite certain of; and that is, drainage must be perfect; for if surface water finds its way into one of my repositories the bees are sure to spot the hives before taking out in the spring.

To make my repository, and have it convenient, I dig a hole 8x10, and 6 feet deep, right in the apiary; cover this hole with logs laid crosswise, and then throw the earth on top, heaping up as steep as the earth will stand. Thus it will shed water perfectly, and no other roof is necessary. For an entrance to this cave, I drift a hole or trench $2\frac{1}{4}$ ft. wide, and at least 6 ft. long. This is also covered with timber and earth, and this ante-room or hallway need not be more than 4 ft. high, because, in taking bees in and out, the hives can be slid in on a smooth stick of timber, say 2x4, much easier (especially if wet or icy) than they can be carried. A door at each end of the entrance-way, and this repository is done.

These repositories need not look unsightly in an apiary—simply a mound of earth in the winter, and hives scattered all over it in the summer. It will take but a few minutes to slide 20 or 30 hives of bees in or out; and if the first tier of hives is a foot or so above the dry earth floor, and the rear of the hives 4 inches higher than the entrance, all the dead bees will roll out of and away from the entrance, and will not clog it, so that no care is required until about the first of March; then dead bees will accumulate. Warm and sultry weather may make it necessary to open the doors at night; but this is seldom required until late in the spring. I have tried underground and overhead ventilation, and discarded both, because

neither works except in windy weather, just when you don't want it.

I now leave plenty of cracks in the outside door, and a few inches of space open, under the inside door; cover this hole with straw, to break the current; and should there be a long spell of cold windy weather, an extra bunch of straw stuffed between the two doors will prevent the escape of heat. The timbers, after being in use ten years in those caves, look like new—not a sign of mold on them.

I find that not more than a half of the space should be occupied by the hives in a repository that has no means for the escape of heat, for the bees will heat up a room surprisingly.

Savanna, Ill.

THOSE PERCOLATOR FEEDERS.

THE PHILOSOPHY OF THEIR WORKING FULLY EXPLAINED.

By Dr. C. C. Miller.

Sitting on a load of bees, on the way home from the Hastings apiary, I said to my assistant, "Suppose a vessel filled with sugar and water, with a hole at the bottom so small that a grain of sugar could not get through, would that act the same as one of our percolating feeders?"

She answered, "If there were a sufficient number of small holes it might; but with a single hole it couldn't get through fast enough."

"But," I said, "suppose the hole large enough so that the syrup came through just as fast as it comes through a percolating feeder. Would the syrup be just the same?"

She promptly said it would not; and when I came to get the matter formulated in words, I found she held the opinion that something in the line of filtration was necessary, and that the liquid must find its way by a somewhat devious passage through the meshes of a cloth or a mass of cotton. The same idea had been in my mind, and I think it quite likely that you, Mr. Editor, had the same thing in mind when you were in search of that colored individual in the fence. And when you struck upon old flannel instead of new, you felt sure you had found "the nigger."

Let me tell you about some experiments I have been making. Although made in the main too late in the season to feed bees, no actual feeding was necessary, for the removal of the syrup by the bees has nothing to do with the points I was after.

I took a baking-powder can, holding about a pint, and made a small hole in the bottom, of such size that cold water would pass through at the rate of about 7 drops per minute. Hot water would pass through much more rapidly. I put sugar and water, equal parts, in the can. A few drops came through very slowly, then it stopped altogether. A grain of sugar may have stopped the hole. I tried holes of larger size,

but it seemed that any hole so small that it would not allow a grain of sugar to pass through was small enough to be entirely stopped by one of the grains.

Then I drove through the hole a two-inch wire nail. Of course, this would let grains of sugar through. To prevent that I covered the hole with a single thickness of thin cotton cloth that was new. Putting in equal quantities of sugar and water, it came through all right in good time. With twice as much sugar as water it made, of course, heavier syrup, but it took four or five days to get through. But I found that, the longer it was used, the slower it went through, perhaps from the fulling of the cloth. Very fine wire cloth, such as is used in milk-strainers, might be more uniform in action. Possibly, however, it may be that there is some other trouble.

Two months ago or more I put an equal quantity of sugar and water in a tumbler, and let it stand. In the course of a few days the water on top was a weak syrup, and the amount of sugar in the tumbler was perceptibly less; but after that time the change was slow; and the longer it stood, the slower the sugar seemed to dissolve. At this writing there is half an inch or so of sugar in the bottom of the tumbler, and a tolerably thick syrup over it. This shows that time is an important element in dissolving the sugar.

Now I'll tell you the conclusions at which I have arrived, although I don't feel that there is no possibility of mistake. When sugar and water are put together, there is a slow mixing; and in a little time the crevices between the grains of sugar are filled with a solution of sugar. Allowed to stand in that way, the water above is prevented from mixing with the sugar—at least, it does so very slowly, the upper part of the sugar gradually combining with the water above it. That was plainly shown in the last experiment mentioned, where it took weeks to dissolve the sugar.

Suppose, however, that, by some means, we remove all the syrup that fills the crevices between the grains of sugar. Water will come down afresh to fill the crevices, and in its turn will dissolve a fresh portion of the sugar. Now, that's exactly the principle we work upon in all of our percolating. We allow the syrup to pass out from below, through some sort of sieve that will allow only syrup and no grains to pass, and we manage so that it shall go through so slowly that the sugar at the bottom will have time to dissolve before the syrup passes through. I think that's all there is to it, and it isn't a question of cotton or wool, old cloth or new cloth. Old flannel isn't a whit better than new flannel, providing the space of new flannel is enough less so that the syrup goes as fast through one as the other. The only point is, to have your feeder or your crock emptied in the same space of time.

Six or eight thicknesses of cheese-cloth worked better than two or three. Why? Because the rim of the crock was uneven; and, when placed on the plate, a single thickness of cloth would do little toward filling the crack where it was largest; whereas, six thicknesses would fill it. If the rim of the crock were perfectly true and smooth, the case would be different. I filled a tumbler with sugar and water, put a single thickness of thin cotton cloth over it, then inverted it over a smooth tin dish. How fast do you suppose the syrup came through? Not a drop came, and I don't think it would if it had stood a year. If you tie a single thickness of cheese-cloth over a crock, then invert it over a plate, it will work all right providing the rim of the crock be just even enough and uneven enough. In general, it would let the water out too fast without giving the sugar time to dissolve; but in that case, if you put enough beeswax under the edge of the crock to make the syrup come out slow enough, I think you'd find it all right.

You said, Ernest, that sugar adhered to the proper bottom of the crock. What made you let it do that? Just give the whole thing a few shakes *after* inverting. In using the crock feeder, the cloth under the sugar plays no part, only that part that comes in actual contact with both crock and plate, and it would work all the same if the middle part of the cloth were all cut away.

It is quite possible that there is a double advantage in having the syrup come through slowly; and we who have been priding ourselves on having a feeder with which we could give 25 lbs. in as many hours may yet change our views. It may be that the bees need longer time to put the right amount of formic acid into their feed.

Marengo, Ill.

[For the percolating feeders on the hive, it is immaterial whether cheese-cloth, old flannel or new flannel be used. We get good results with all of them; but it does make a big difference, when percolating syrup by the B. Taylor plan, described in GLEANINGS recently (p. 803). As there explained, old flannel is decidedly better than the new.]

Regarding the crocks, we found that they were better than inverted sap-pails, because of the very fact that their (the crocks') tops would be more or less irregular, while the pails would fit so closely as to make the feeding very slow. We got better results by discarding even the plates, and using boards; and if they are warped a little, all the better. On these the pails would give as good results as the crocks.

Yes, the sugar did adhere to the bottom of the crocks; but shaking, or, rather, a good thorough stirring, did not seem to prevent the slight residue of sugar entirely, although it tended greatly to reduce the amount.

Some have asked what was the principle upon which the percolating feeders work. I think you have given the philosophy of it, so that every one may understand it; but it may be well to add, that the percolators work on the atmospheric principle. In that respect they are similar to the Hains and E. France, or what

is sometimes called, incorrectly, the Hill feeder.—Ed.]

ITEMS FROM SOUTHERN CALIFORNIA.

STORMS OF BEE-MOTHS.

By J. P. Israel.

Friend Root:—When the poetess wrote,—

Leaves have their time to fall,
And flowers to wither, at the north wind's breath,
she was not writing of the oaks of Southern California. The oak here is an evergreen — always green. There is no set time for the leaves to fall. In fact, when a leaf gets old the young ones push it out of the way, just as the young bees crowd the old ones out of the hive at swarming time. But with the oak this goes on all the time, winter and summer, so that the oak-forest is a perpetual green. Has all this any thing to do with bee-keeping? Oh, yes! very much indeed. The manzanita, willow, and oak, in the order named, build up our colonies and prepare them for the harvests that come only when mountain and valley are covered with the purple-white bloom of the black sage. But, listen, all ye sages, philosophers, and entomologists of the East, and I will give you a problem to solve that was never submitted to you before. I would solve it myself without troubling you, but it is about the only thing I don't understand.

Early this spring — remember, the trees are always green, and that our spring often begins as early as Jan. 1 — clouds upon clouds of bee-moths came down upon our oak-forests. Now, don't say they were *not* bee-moths. I know the gentleman well. I have slept with him and eaten at his board — or the place where he boarded. I have played hide-and-seek with him for twelve years. He did the hiding and I the seeking. Know him! Yes, I know him as well as I do my brother. In fact, he has stuck closer to me than a brother. Well, he came numerous and promiscuously — in clouds that whitened the air; in storms that swept over brake and bush; in cyclones that settled down into a calm only when it reached an oak-grove. Here they went to work. Every leaf was stripped from the trees, and the bloom too, if it had appeared. Many trees they left as bare as your oak-trees in winter. Others they did not touch at all. On some trees they left the bloom, and these now have acorns nearly ripe, and not a leaf on the tree. But the most of the trees that they touched they stripped clean of leaf and bloom. The same thing occurred in 1885 — another dry year, just like this.

FRAMES, EIGHT VS. TEN.

Am I a prophet or the son of a prophet? Did I foresee the great war that is now raging in regard to eight or ten frames? If not, how did I get on the fence twelve years ago, hugging to my heart nine frames, so that I now can fall into the arms of the victorious party? Come to

terms, gentlemen—come to terms and end the war. Now, Mr. Eight, you put in just one more frame (it is not much to do), and meet your opponent half way. Very well. Now, Mr. Ten, will you not throw overboard one frame—only one? Why, you didn't kick against nine. Do you want your brother to do all the compromising? For shame, man! Give up one frame and end the war.

BEE-PARALYSIS.

No man can say a word against Prof. Cook, and hold fast to my good opinion. Prof. Cook is always right, even when he is in the wrong. But I must differ with him in politics as to the cause of the "nameless bee-disease." Starvation is not the cause of it. I took out of my apiary over fifty hives last summer, in which the bees starved to death (you know we had no honey this year), and not a trace of the disease was found. In fact, I have now but one case of it—one hive—and that hive is heavy with honey. Three years ago you could gather up quarts of bees in front of almost any hive. I did nothing for them. I just concluded I was "busted," and let them go. But they "weathered the storm" till the flowers came. As the honey-flow increased, the disease decreased, and finally disappeared altogether. All my experience establishes two things: First, the disease will rage in a hive that is full of honey, therefore starvation is not the cause of it. Second, an inflow of honey, whether from the flowers or the sugar-barrel, will cure it; therefore Prof. Cook was right when he said feeding would cure it. But the full hive must be fed, as well as the empty one, to effect a cure of all.

Escondido, Cal., Oct. 24, 1894.

[I should like to know what Prof. Cook would say of those "storms of bee-moths." I know you are an old veteran, but are you *sure* those destroyers of the leaves were really and truly *bee-moths*, or were they something that *looked* just like them? You know the carpenter-bee *looks* just like the bumble-bee, but is quite different in habits and instincts.

Regarding bee-paralysis, Mr. Dayton, on page 828, explains pretty well how you and Prof. Cook may both be right.—Ed.]

APICULTURE IN GERMANY.

REPORT OF THE VIENNA CONVENTION.

By C. J. H. Gravenhorst.

The 39th annual convention of the German, Austrian, and Hungarian bee-keepers was held at Vienna, Austria, Sept. 3—5, 1894. More than 350 delegates were assembled, from Germany, Austria, and Hungary, and among them Dr. Dzierzon, of Lokowitz, Germany, in spite of his 83 years. After Pres. Ritter von Beck's address, Dr. Dzierzon, amid great acclamation, stepped up on the platform. He answered the question, "Whom have we to thank for the convention, and the exhibits thereof?"

Dr. Dzierzon said he had been a contributor

to the *Bienenzeitung* (Bee Journal) for 50 years, and he could tell under what difficulties that paper was established. It had greatly favored the organization of this general movable convention, and all that has been gained by it. He said that, in 1853, he imported the first colony of Italian bees from Italy. This had proved to be of great importance. With the aid of the Italian bee he had solved many problems, as, for instance, the duration of life of the worker-bees; parthenogenesis, etc. Then Dr. Dzierzon praises the superiority of the Italian bees, as they gather more honey than any other kind. He does not understand why it is that there are bee-keepers who do not see this superiority. Without conventions and expositions, modern bee-keeping would not have spread so rapidly over the world, and the use of the movable-comb hive, honey-extractor, comb foundation, etc., would not have been so general as now. Finally, Dr. Dzierzon said that the most perfect movable-comb hive is his "Twin" hive. In behalf of the assembly, Baron von Ambrozy, of Hungary, thanked the venerable man for his good lecture.

F. W. Vogel, of Leitschin, Germany, the second speaker, endeavored to unite the three opinions of the bee-keepers concerning the origin of honey-dew. Some bee-keepers say that honey-dew is simply the product of plant-lice. This view was the oldest, and for half a century all bee-keepers had supported it. Other bee-keepers said, "No, there is no plant-louse honey; the bees do not gather the excrement of plant-lice. What they do gather in this line is only the juice of the plants, secreted by the leaves, and has nothing to do with plant-lice." Other bee-keepers were of the opinion that honey-dew is as much a product of plant-lice as a secretion of the plant itself. Vogel says there is a mistake about this. So far as he had observed, the plant-louse would suck the sap from the plants, and mix it with its saliva. In the chyle-stomach the sap is again mixed with the gastric juice, and then comes forth as a sweet sap, but not as excrement. According to Vogel's experiments and observations, all honey-dew is the product of plant-lice, and not a secretion. Bogdahn, of Germany, is of the opinion that the natural philosophers and microscopists must solve the problem as to whether honey-dew is the product of plant-lice or the secretion of plants, or both.

Dr. Dzierzon says: "The richest sources of honey-dew are the pine and fir trees. Linden and other leaved woods do not yield much honey-dew. The bark-beetle pierces the twigs of the pine and fir trees, then the juice comes forth out of the wounds. But this is not honey, and the bees do not gather it." The juice of the pine-tree is changed into sweetness, and this is done by the plant-lice and cochineal-kermes. The honey of the latter is very valuable.

Karl Gatter, Vienna, Austria, answered the

question, "Has the old straw skep a right to be used?" "Yes," said he, "farmers should use the old skep, but only with supers, and if they do not know how to manage a movable-comb hive, or if they can not spare the time for a fall management of the latter."

Baron Ambroz, of Temes Gyarmata, Hungary, replied to the question, "What are the gains in bee culture since Dr. Dzierzon's advent?" A great number of implements for bee-keeping have been invented, which in most cases do more to injure bee-keeping than to help it—for example, the drinking-vessels for bees, used in the hives. To give a colony of bees water in the hive in winter, or early in the spring, is, in most cases, not necessary. To use a heating-apparatus for raising bees is also useless. He could not recommend such work. The best inventions made were the movable-comb hive, the honey-extractor, comb foundation, and the queen-excluder.

Sept. 4, Metzger, of Neutra, Hungary, spoke of the anatomical structure of the honey-bee, and mentioned his theory that the queen is an hermaphrodite. The drone-egg is fecundated in the *receptaculum seminalis* of the queen, not with a spermatozoön derived from a drone, as is the case with those eggs which develop into a queen or worker-bee, but from a secretion in the *receptaculum seminalis* of the queen.

Pater Coelstin Schachinger, of Schœnbiehl, Austria, answered the question, "Is it advantageous to get bees from foreign countries?" He said it is not. The best bees are the native.

Dr. Dzierzon defended the Italian bee; and Mr. Vogel Letschin, Germany, recommended a cross-breed of two varieties. He is of the opinion that there only two varieties of the genus *Mellifica*—the Egyptian and the black German bee. Any other variety, as the Italian, Cyprian, Carniolan, etc., is derived from these two varieties. He had in his apiary a bee that could not be distinguished from an Italian bee. He bred it by crossing the Egyptian with the German bee. He had also bred a strain of bees like the Cyprian and the very black bee.

Guenther Gisperleben, Germany, confirmed what Dr. Dzierzon said about the Italian bee. He has had, every winter and spring, more losses among the Italian queens than in any other variety of bees; therefore he did not like the pure Italians. The many queenless colonies in spring were not profitable.

Pastor Fulde, Silesia, Germany, recommended a new specific for foul brood—viz., lysol. He has used it mixed with the food.

Guenther Gisperleben, Germany, answered the question, "How do the various hives affect the swarming of bees and the yield of honey?" He said, "Too small a hive would, of course, favor swarming—as, for instance, the old straw skep; but as for the movable-comb hives, as they have skillful managers the swarming fever could be suppressed in many cases by proper

manipulation. To suppress the swarming fever entirely would be a great task, even in a very large hive; for such colony would swarm mostly at a time when the bee-keeper least desires it." According to a fundamental law of the increase of brood and worker-bees, large hives with larger frames, such as the German standard frames, have been recommended. These large frames have by no means done this year what they should have done, for the honey-flow failed. Mr. Guenther, with his German standard frames, has had a first-rate honey-harvest, while the fashionable bee-keepers, with their large frames, got nothing. He, as well as Baron Berlepsch, Dathe, and other prominent bee-keepers of Germany, had, formerly, larger frames, but soon learned by experience that this frame was not advantageous in more than one case. He and other German bee-keepers abandoned the larger frames, and their honey-yield confirmed the wisdom of so doing, during the lapse of years. Hence, he said, it would be best to hold fast to the German standard frames, and so much the more as this frame is within a trifle of being as large as the Langstroth, which is used by the greatest number of the most experienced bee-keepers of America.

The next convention will be held at Leipsic, Germany, in 1895.

The exhibit of bees, implements, and honey, at Vienna, was undoubtedly the best ever seen there, and showed the great progress that bee-keeping has made in Germany, Austria, and Hungary.

Wilsnack, Germany, Oct. 22.

NOTES OF BICYCLE TRAVEL.

AT DR. C. C. MILLER'S.

By Ernest R. Root.

That night, although it was rather late, and I had ridden 80 miles that afternoon, we sat up and talked. At a late hour I retired, and early next morning—yes, even before I was out of bed, some one came into the room while I was rubbing my eyes trying to make out whether I was on the wheel or where. The doctor, it seems, had been watching his chance; and as soon as I showed the least signs of awakening, he stood before me with a new self-spacing device which he had been studying over a good deal.

"Well, what do you think of it?" said he.

I blinked and stared awhile, and, for want of something better to say, I replied, "I don't know." On becoming fully awakened I concluded it might have some good points about it, although I did not like it as well as the Hoffman self-spacing arrangement such as we use. I will not mention it in detail here, because the doctor will probably describe it later on.

After breakfast the doctor took up his record-book—the book in which he keeps the records

of all his colonies, and we proceeded toward the apiary. He had lots of new fixings which he wanted to show me.

"Ah, yes, that record-book," said I. "You always have to think to pick that up before

He pried off the cover, but found the bees were not taking down the feed as rapidly as he had expected. Indeed, they had not even found it.

Right here it will be unnecessary to give the full discussion that followed, as that has already been in GLEANINGS regarding the percolator feeders. But I may say to you that the talk was an earnest one; and after we had looked over the feeder on the hive we withdrew to one side, as shown in Fig. 2. Here you see the doctor sitting down on his favorite adjustable seat, while your humble servant sat on his seat—his heel—and at the feet of Gamaliel, as it were, as he talked and explained.* You see we had before us a glass tumbler on a plate, and between us was the Crane smoker. At the back of Dr. Miller was his honey-house, work-shop, and bee-cellar, the opening to the latter appearing just over his hat. As you will notice, it is convenient to the apiary,

which is just behind me, one bordering closely on the bee-cellar. Let me see. Just over the peak of Dr. Miller's hat you will see something that looks like brood-frames. I suspect that



FIG. 1.—"I BELIEVE IN SITTING DOWN."

you go into the yard. What do you do when you get clear out into the apiary and find you have forgotten it?"

"Go back and get it," said he, comically.

When we were in the apiary we were joined by Emma, Dr. Miller's assistant in the apiary. After having lighted the Crane smoker, the first thing the doctor did was to go toward the hive that contained the latest percolator Miller feeder. Anticipating my visit, he had put it on the night before.

"And now," said he, "we shall see how it works," as he deliberately and comfortably seated himself on his "adjustable apiary seat."

"Ah! that is your seat, is it?" said I.

"Yes, sir, and I always believe in sitting down and taking things easy."

I will explain to our newer readers, that it is a box that is longer than wide, and taller than either one of the other dimensions. It has hand-holes cut in the several sides, so that it can easily be carried. When working over a tall hive it is set up the tall way, and so on. You see, it is adjustable to the different heights. Of course, I made fun of Dr. Miller for sitting down. Fig. 1, Kodaked by Emma, shows him as he sat working over that hive, preparing to pull the cover off.



FIG. 2.—"YOU SEE, ERNEST," ETC.

* I was dressed, as you see, for comfort in traveling—bicycle-sweater, Knickerbocker pants, long stockings, etc.

they are some that were discarded by Dr. Miller, who has been experimenting with different fixings.

While we were thus engaged, Emma amused herself by snapping the Kodak at us, for she did not propose to have *her* picture put in

less I notice he was quite glad to adopt the modern fixtures and self spacing Hoffman frames. Yes, he even liked the working of that V edge, which, theoretically, looked like a poor arrangement. In practice it was doing a great deal better than he thought it would.

"I notice you have your hives arranged in pairs," said I.

"Yes, it economizes room," he replied. "And then, you see, in uniting in the fall it is just the easiest thing in the world. I remove one of the hives and put the bees in the other, moving this hive at the same time a little toward where the other one stood. The flying bees will, of course, enter the one hive. Then you will notice, also, that the two rest on one set of skids, and this saves hive-stands."

I had to confess that I liked that arrangement far better than the one we use in our own apiary, where we have hives grouped in lots of five, on the S. E. Miller plan; and I think now, that, when I set out another apiary, it

will be on this same plan—two hives on one stand.

"Now, doctor, how do you like that Crane smoker?"

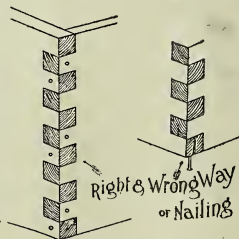
"It is a splendid implement."

"And the hinge—does that work nicely?"

"Beautifully; and I do not lose the nozzle."

After dinner the doctor and I repaired to the shop. Here he had quite a stock of supers and new hives, all ready for the honey-flow which did not come. But the thing that struck me

particularly was the way he nailed his Dovetailed hives. He is generally right, and has good reasons; but in this case, in attempting to save nails he was spoiling the dovetail. The accompanying cut will show you



the right and the wrong way. The wrong way is the one Dr. Miller used; and I am sure it is of so much importance that we call the attention of the general reader to it here, for others may be making the same mistake. When the nails



FIG. 3.—THE ROAD TO WISCONSIN.

GLEANINGS. The three of us finally went back to the apiary, while I asked questions something after this fashion:

"I see you have got numbered tags on your hives. Now, suppose you want to change the number; or suppose that a colony is transferred from one hive to another, and that you wish to keep a record of that particular queen and that particular hive."

"Why, just pull the tag off and put it on the other hive."

The nailhead was sticking out, and it was evident that this could be done very easily with a claw-hammer.

"Oh, yes! I see you don't paint your hives," said I; "and I see some of them, especially those not dovetailed, are gaping at the corners."

Then the doctor began to argue on the advantages of no paint—that the hive was warmer, etc., and without the paint the hives would last longer than he cared to have them; for at the end of 20 years he wanted something different, any way—that is, if he chose to follow in the wake of such young chaps as I; and then he began to score me for the changes that have occurred during the last ten years, as if I were to blame for the whole of them. But neverthe-

are driven *through* one of the notches, surface side, into the *end* of the grain of the other board, there can be no splitting; but when it is driven through the *edge* of the notch, you will notice that there is nothing to prevent the dovetail from splitting. The doctor made a feeble defense in favor of his way; and although he did not *say* he thought I was right, I think he thought so.



FIG. 4.—"SCORCHING."

The next day it became necessary for me to make my way off again. The bicycle was oiled up, and Dr. Miller showed me the way. Well, here is the result in Fig. 3, for Emma had the Kodak, and was recording things as they went on. Mrs. Miller stands in the background near the house. Your humble servant—well, you know who he is; and the doctor (for it was a hot day) stands pointing down the road, with his coat and vest off. The Miller residence shows in the background, but, unfortunately, it is a rear view. In spite of the weeds, mentioned by the small boy, the Miller home has a pretty approach along a winding driveway. Near the hitching-block stands Dr. Miller's horse that has seen many a day's service among the bees, and knows perfectly well what it is to draw bee-loads.



FIG. 5.—"ERNEST, I'M SORRY YOU ARE GOING."

After the doctor had told me the route that I was to take to get into Wisconsin I told him I would illustrate to him what "scorching" meant. Well, Emma has shown the result in Fig. 4, and the doctor is greatly shocked that I

should ever assume such an attitude, which I confess I do in hill-climbing. As I started to leave, the doctor looked sober. Said he, as I was about to pull out, "Ernest, I'm sorry you are going. I have enjoyed your visit greatly. I only wish it might be longer."

Fig. 5 shows how sorry he looked as Emma caught us just as I was preparing to give the pedal a shove for Wisconsin and its bee-keepers. I might remark, also, that my position in riding is usually as there shown—neither a straight-up bean-pole position nor a scorch.

Some of my friends think that my recent sickness was owing to some of my long hard rides. I never felt better in my life; and if any one tells you that long bicycling, or such riding as I took, is injurious to health, just tell such a one that he does not know what he is talking about. It was not long riding, but *overeating* after I got home, caused by an appetite whetted up to a keen edge, that made me sick. You see, when I got down to hard office work and no exercise, those big dinners made mischief. There, now, I think I'll not confess any more; and my only excuse for referring to it is, that it may be a warning to others.



CONTAMINATING QUEENS THROUGH HYBRID BEES AND ROYAL JELLY.

Question.—I have two colonies of hybrid bees in an isolated position, which I wish to have rear some queens from Italian larvæ by the plan given in your book. Now, if I supply the cell-cups with royal jelly from a hybrid colony, place larvæ in them from a pure Italian queen, and place these prepared cups in a hybrid colony for completion, will the queens hatched therefrom be pure Italians?

Answer.—In the first place, I object to the calling of our Italian bees or queens pure, for they are nothing but what would be properly called a thoroughbred variety of bees. This is proven in the fact that we have all shades and colors of these bees, from those having a golden abdomen nearly its whole length, to those which are so nearly black that it takes an expert to tell whether they have any Italian blood about them, only as it is known that they were imported from Italy—the very same place from which came the progenitors of the most beautiful bees obtainable in this country. Had the Italian bees been pure, in a sense equal to that of the pure German bee, no such change of color could possibly have come about by years of breeding for color. But, to the question.

I take it that the questioner is in doubt about the part played through the bees which prepare the food for the queen larvæ, he evidently

having heard something of the old theory that was put before the bee-keeping fraternity during the sixties, of "like food, like queens." As hybrid bees will always give the best results in queen-rearing of any variety of bees with which I am acquainted, except the Cyprians, I use them very largely to feed and perfect queen-cells, and, after years of careful watching, and with years of success in perfecting as yellow bees as can be found in the world, I fail to find wherein the food has any thing to do with purity of stock or the changing of the color or the disposition of the progeny of any queen in the least. If royal jelly prepared by black or hybrid bees could contaminate queens of the Italian race, surely the same food prepared by the brightest of the golden Italians would contaminate the black or German race of bees. I have proven by experiment that black queens brought to perfection in yellow Italian colonies are not in the least degree different from those nursed by their own "blood," hence I feel that I am justified in going on record as saying that the queen progeny of any race or variety of bees are in no way changed as to markings, disposition, etc., through the food given them. If there are those among the readers of GLEANINGS who think otherwise, I should like to have them tell us upon what they base their conclusions. While these nice points are of interest only to queen-breeders, in a dollar-and-cents way, yet they are helpful in making up the general fund of bee-knowledge which we are handing down to future generations; hence I believe GLEANINGS will be willing to give all the best thoughts on the matter which may be sent in.

EARLY REARING OF QUEENS.

Question.—How early in spring can I commence to rear queens, taking the stage of advancement in drone-rearing as a guide? In other words, if I commence to raise queens when I see larvæ in drone-cells, will drones be on hand to meet the queen when she is ready?

Answer.—If you use any of the plans by which larvæ from 24 to 36 hours old are given to the bees from which to rear queens, your queens will hatch in from eleven to twelve days from the time you start the cells; as the rule for a queen is, three days in the egg form, six days in the larval form, and seven days in the chrysalis, making a period of sixteen days from the egg to the time the young queen emerges from the cell. Very warm weather will hasten the development during all stages, to a slight extent; while very cool weather, or inactivity with the bees, as in the fall of the year, retards this development. I have never known this development to be hastened to a greater degree than having the queen hatch in 15½ days; but I have had it so retarded in the fall of the year, especially where queens were reared in upper stories, that they did not emerge from their

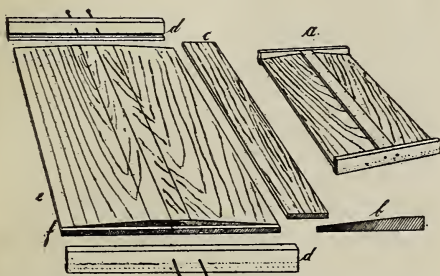
cells, or become fully mature, till 20 days from the time the egg was laid by the mother-queen. But, as I said before, 16 days is the rule, and it is one which can be depended upon in 19 cases out of 20. As a rule, the young queen does not go out to meet the drone till she is from seven to eight days old, so we have the time as being from 17 to 20 days from the starting to rear queens to the time they would naturally become fertile, where every thing is favorable. Occasionally a queen will fly from the hive, evidently in search of the drone, when from four to five days old; and I have known them to be 28 days old before becoming fertile; but in nine cases out of ten, queens are fertilized when from seven to eight days old, and commence to lay when from nine to ten days old, when the weather is favorable. If the above is correct, and I believe it is, then it will be seen that we shall want flying or mature drones in 17 days, at least, from the time we start our queen-cells. Now, I have not as carefully observed the time of the maturing of drones as I have that of the queens; but my impression is, from what I have experimented along this line, that the drone is in the egg and larval form about 10 days, or one day longer than the worker, and about fourteen days in the chrysalis form, making a period of 24 days from the time the egg is laid to the perfect drone. From six to eight days after the drone emerges from the cell it goes out for its first flight, to void excrement, etc., similar to what the worker-bees do, which we call their first play-spell, during which they mark their location also. After this first flight they go out every pleasant day from 12 m. to 3 p. m., to meet the queens, if any are to be found, so that we have about 32 to 34 days from the time the queen lays the eggs in the cells for the drones, to the time they are ready to meet the queens. As we had from 17 to 20 days from the time we commenced to rear queens to the time the queen would go out to meet the drones, it will be seen that the drone eggs should be laid 17 days, at least, before we start to rear queens, and this would bring the time to where the drone brood would have been sealed six or seven days. I never commence to rear queens till plenty of sealed drone brood appears in my drone-rearing colonies; while the rule I adopt is, not to commence to rear queens till the eyes of the chrysalis drone commence to change from the white color of said chrysalis while in its first stages, to the purple color of its later stage. Very early queen-rearing generally results very unsatisfactorily in this locality, as the colonies used for this purpose are very much retarded about building up, and the queens do not come up to the standard of perfection unless great care is used in seeing that all the requisites of a perfect development are present, which is well nigh impossible during March, April, and May.



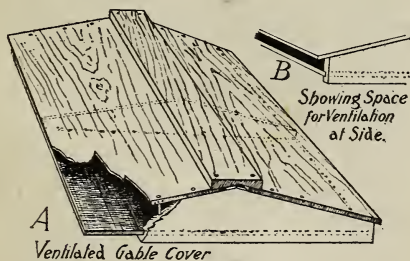
IMPROVEMENTS IN HIVE-COVERS, AND DIRECTIONS FOR NAILING.

Among the improvements adopted for our Dovetailed hive for the coming season is the changed construction of the covers. This was mentioned in a recent issue. We are now prepared to show you detailed illustrations of both the "Higginsville" and "Ventilated Gable" cover. In doing this we make extracts from our new circular packed with each lot of five hives, giving directions for nailing. After giving directions in regard to bottom and body of hive, with frames and division-board, the directions proceed as follows:

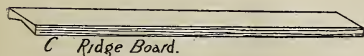
If you did not specify the kind of cover in your order, you should have material for the Higginsville cover.



Two boards, $7\frac{1}{2} \times 21$, beveled as at *b*, and rabbeted $\frac{3}{8}$ at each end as at *f*. Place the two thick edges



Ventilated Gable Cover



Ridge Board.



Gable End

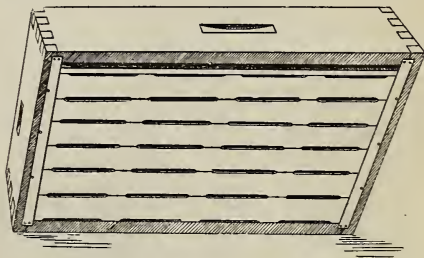


Cover Board.

together, and nail to each end a cleat with $\frac{3}{8} \times \frac{3}{8}$ -in. groove. Use two $2\frac{1}{2}$ -inch or 8d casing nails in each

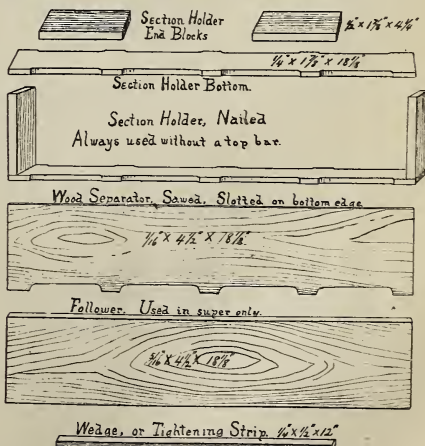
end, as shown. Nail on the cap-piece *c* with eight 1-inch nails, and the cover is complete as at *a*. The reason for driving only two nails near the center, through the cleat, into cover or bottom, is, to allow for shrinking or swelling in the grooved cleat from either side, without splitting the board.

If you ordered the ventilated gable cover you will have material as follows: Two gable ends, *D*, grooved for under board; two cover boards, *E*; one thinner gable piece for center, to strengthen the cover. To nail, first drive three $1\frac{1}{2}$ -inch or 4d casing nails through each end of cover-board into gable end, as shown. Be careful, in driving the nail nearest the outer edge, not to get the point into the groove, and thus interfere with sliding the under board into place. By spacing these cover-boards near or far apart under the ridge-board you can make the cover project at the sides or not, as you prefer. The side should be projected $\frac{1}{2}$ to 1 inch beyond the end of gable end, as at *B*, so as to prevent a driving storm from beating in on the under boards. Nail the ridge-board from above with a 4d casing nail in each corner, and on the under side by eight 1-inch nails, four through each cover-board, into the ridge. Nail the center gable piece with two 4d casing nails, through each cover-board. Now slip the two thin boards, $\frac{1}{4} \times 7 \times 20\frac{1}{2}$, into the groove in the gable ends, and drive one 1-inch nail from the bottom of the gable end through the inside corner of each board at each end, also through the middle inner edge into the middle gable. This method of nailing leaves these boards free to shrink toward the center, without splitting, and keeps the crack between closed. If your hives are No. 1 or 2, 11 or 12, with section-holders for the super, then you will find two tin strips, about $\frac{3}{8}$ -in. wide, for each super. Nail these to the lower inside edge of the ends of the super, to support the section-holders, thus:



Use about seven 1-inch or 2d fine nails in each strip, as shown.

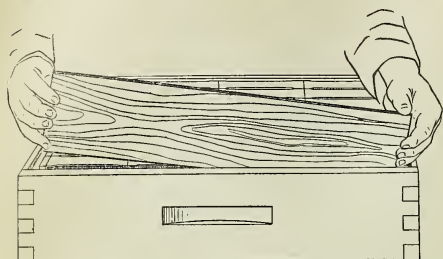
You will also have section-holders for the super.



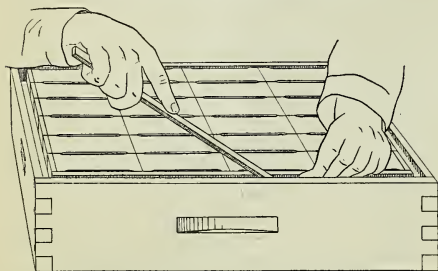
Please notice that these section-holders have no top-bar—simply a slotted bottom nailed to two end-blocks, as shown above. Use two 1-inch nails in each end.

Having your sections folded, and starters inserted, place four in each section-holder; then put 6 of

these in each eight-frame super, with 5 slotted separators, one between each two section-holders, and slotted edge down, resting at the ends upon the tin strip, as shown above. Then insert the follower, thus:



Then the wedge, or tightening-strip, thus:



Place it between the follower and side of super diagonally, so as to wedge the contents of super tight, and prevent the bees from chinking in propolis between the separator and edge of section.



We have just made some twelve-frame Dove-tailed hives for an order. Compared with the eight-framers they are "whoppers."

We are going to give the sealed cover another trial this winter—on a smaller scale, however. Our basswood apiary stands on a sort of hill, exposed to the full sweep of the west wind. Half the colonies are under thin boards sealed down, and the other half under absorbing cushions with the Hill device.

We have recently increased our boiler capacity, for running our plant, to 180 horse-power, and it seems now necessary to add to our engine capacity to aid us in making the new sections. We have also put in a new and expensive boiler-feeder. It feeds automatically three boilers at a time, and at the same time removes and prevents scale formation, or is supposed to do so. We have also made some recent additions in the line of some fine and expensive wood-working machinery. We believe now we have the best and largest equipment for the modern method of making sections in the

world. We can turn them out easily at the rate of 75,000 a day, and, if necessary, increase the output to over 100,000, and all the sections of the new and polished sort. I believe that we have omitted to mention that, among our other improvements, has been the addition of a \$700 paper-folder for folding GLEANINGS, A B C book, and our catalog.

COFFEE A SUGAR SUPERIOR TO GRANULATED.

We have been taught, for a number of years back, and had come to accept it as a fact, that granulated sugar was the purest and best of all sugars for table use; that coffee A was good, but not so pure as granulated. I was quite astonished to read in the last *Ladies' Home Journal*, under the head of "Making Candy at Home," by a writer who is evidently expert in such matters, the following: "When making any kind of candy it is best to use, when it can be obtained, coffee A instead of granulated, as it is nearly always purer. Select only sugar that is dry, uniform in quality, with hard, sparkling crystals." This last would seem to apply especially to granulated, as coffee A is liable to be moist at times. Who among our readers can give us expert testimony on this question? I presume there is no very great difference between the two sugars; but if there is a difference, let us take that which is best when the price is practically the same.

THE FOLLY OF LIFTING 20-LB. STONES; ENAMEL CLOTH NOT NECESSARY; HIVE-COVERS, ETC.

I ALWAYS have a feeling of pity for the man who will use a 20-lb. stone on his hives, to hold down a shade-board or cover. If you go into his apiary and watch him work he will lift off this big stone, and drop it on the ground with a thud; off comes the shade-board, then the cover, and finally the quilt or enamel cloth; and this latter is where the whole trouble lies. The use of thick-top frames, $\frac{1}{4}$ -inch bee-space, and a cover that is flat, at least on the under side, renders a quilt superfluous and an unnecessary expense. Without it the bees will fasten the cover down so it will never blow off, but not so tight but that it can be easily removed. But I suspect that many use cloths because they will stick and hang to the thin and narrow top-bars with their attendant burr and brace combs. If I had to use such old-fashioned brood-frames, I think I too would use the enamel cloth. But there is a far better and simpler way. If it is unnecessary to use a 20-lb. stone to hold the cover down, how about the shade-board, that bees can not fasten down with propolis? In the first place, if I could not have shade I would make the shade-board part and parcel of the cover, leaving an air-space between it and the cover proper. At the present prices of honey, and its disposition to go downward rather than upward, it does not seem to me than any bee-keeper can afford to

lift 20-lb. stones. We have lifting enough to do in the handling of supers and hives full of bees, without handling heavy boulders.

THE A. I. ROOT COMPANY.

THE friends will notice by our price list and stationery that the above title to our business takes the place of simply "A. I. Root." Perhaps I may say that no new method of management will be introduced, and no new members are to have any thing to do with the business. It will be conducted as it has been heretofore, by A. I. Root and his family, including the son-in-law, Mr. J. T. Calvert, who has been for many years business manager. A. I. Root, besides being president, will, for the present, be by far the largest stockholder; Ernest R. Root, vice-president; J. T. Calvert, secretary and treasurer. The principal reason for making this change is, that the business may go right on uninterruptedly in case of death or accident to the founder, A. I. Root. We as a family do not desire the intervention of law or lawyers to settle up our business in case of death to one or more of us. The present magnitude of our business renders it impossible for A. I. Root himself to even read all the correspondence; but where any letter seems to be directed to him personally, or where there is a request that it be handed to him at once, it will always go into his special tray. I wish that I could add that it would always receive a prompt and fitting answer; but, dear friends, that is beyond my power. Almost hourly I am called on to decide which matter that lies before me is of the greatest importance. A. I. R.

A MODERN HOUSE-APIARY; A SUCCESS IN THE HANDS OF F. A. SALISBURY.

WE have just had a very pleasant visit from F. A. Salisbury, of Syracuse, N. Y., the one who handles our Eastern Branch. He is one of the bright and enterprising bee-keepers of York State. Among other things, he is using a house-apiary after the plan of the one used by H. P. Langdon. He is well pleased with its working, and thinks he can handle a greater number of colonies with less labor than by the outdoor plan. The modern bee-escape makes many of the manipulations in the house, that were formerly impracticable, now perfectly feasible. He took off all his comb honey with the escapes. The hives are all in easy reach of his tools, and the windows are arranged for the easy escape of the bees in case they should get out in the room. In feeding up for winter he simply pours into his extractor sugar and water of equal proportions, sets the thing running for a few minutes, and, as he says, draws off clear syrup. How a percolator feeder can give a better article he can not imagine. He is certain that his syrup makes a good winter food, because the bees have been wintered on it successfully three or four winters. He could not understand

why we should fail to get a syrup by the same plan. I now think the trouble was because we did not give the plan a thorough enough trial.

Well, this fall the syrup was made in the house-apiary, within a few feet of the colonies to be fed, and yet out of reach of robbers. It was then drawn off into feeders and put on to the hives, and the whole job almost within arm's reach. All the feeding was done in a surprisingly short time, as, indeed, any operation is in his modern house-apiary. He has made some changes on the Langdon plan, and has promised to send us a photograph, giving an inside and an outside view. As Mr. Salisbury secured a big crop of honey, and some of his neighbors got little or none, I am sure we shall all be interested to know more about that house-apiary.

GOOD NEWS FOR TEMPERANCE WORKERS.

OUR readers will remember that, in our issue for Oct. 1, p. 772, I mentioned the gin-palaces so thickly grouped about the Soldiers' Home at Dayton, O. Well, I am very glad indeed to give place to the following, which I clipped from the *Ohio Farmer*:

The Ohio supreme court decided last week that all saloons within two miles of the Dayton Soldiers' Home must be removed, as the State law is constitutional.

THE NEXT NATIONAL CONVENTION AT TORONTO.

I see you were present at the late convention held at St. Joseph, which appears to have been eminently successful in spirit if not in the numbers present. I am glad Toronto has been selected as the next place of meeting. At no other place in Canada can a meeting of this kind be made so successful. Its accommodations and attractions surpass those of any other town or city in Ontario, especially to strangers. It is within three hours' sail of Niagara, which is historically interesting to both Canadians and Americans as being the battle-ground of one of the severest conflicts of the war of 1812. The town of Niagara is but a few minutes' run to the Falls, over the electric railway, the power for running which is generated by the great cataract itself. If the convention be held during the Industrial Fair, very cheap rates will be had, as one of the days on which it is held is known as "American Day," when extremely low rates are made by arrangements of the fair's managers, over the principal railroads of the United States. The fair itself is well worth a visit, being the best annual show on this continent—perhaps the best in the world. As an evidence of the truth of what I say, I send you a copy of its Prize List. It is that of 1891, as I have none of a later date at hand, and the last is the best. On page 50 you will see the liberal prizes its management offer for honey alone.

R. MCKNIGHT.

Owen Sound, Ont., Nov. 3, 1894.



When the poor and needy seek water, and there is none, and their tongue falleth for thirst, I the Lord will hear them, I the God of Israel will not forsake them. I will open rivers in high places, and fountains in the midst of the valleys; I will make the wilderness a pool of water, and the dry land springs of water.—ISA. 41:17, 18.

While at the bee-keepers' convention at St. Joseph, the following letter was handed to me.

Friend Root:—I see by GLEANINGS you are coming from Kansas City to Lebanon, on a bicycle. We are on or near your route. You will come through Clinton. It is on your way, and you will want to see its artesian wells—three of them; then come southwest out of Clinton by the standpipe, and across the wooden-covered bridge over Grand River, and on across the prairie; then across the Deepwater bridge. Stop at the first house on the road west of the Dunkard church. It is eight miles south of Clinton. We are not extensive bee-keepers, but have a few stands, and some honey and milk. We shall be very glad indeed to have you come, and shall feel disappointed if you don't. Mr. Bonham lives across the street from the standpipe. He is a bee-keeper and nurseryman. Come and see us, any how. You can not miss the road.

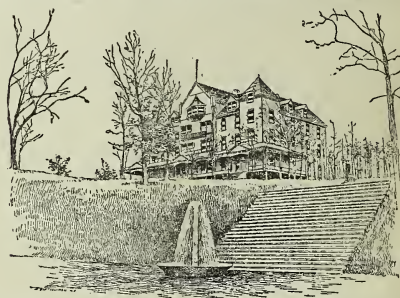
Deepwater, Mo., Sept. 10. J. A. STEVENSON.

Of course, I accepted the invitation for the sake of seeing the artesian wells, even if for nothing else; but imagine my disgust on discovering, as I neared Clinton, that the letter I was depending on to guide me had been sent by express with my heavy suit of clothes! I remembered about Clinton and the wells, and also that my friend lived at Deepwater, near Clinton: but I could not, for the life of me, recall the name. I thought, however, that I should be able to hunt him up. When a few miles from the city of Clinton, along the bank of a beautiful river I saw some large hickory-nuts, even right out in the road, where it wound along through the woods. In fact, there were so many of them that I had to dodge them with my wheel; and some of them, even when they were shelled out, were nearly as large as hen's eggs. I finally stopped, gathered my hands full, and sat down on a log to see if those great big fellows were as good as the thin shellbark hickorynuts of Ohio. I should say they were every bit as good, except that they have a little more of the flavor of blackwalnuts. It made me think of the time when we used to have hickorynuts and cider, away back forty or fifty years ago. Then I began thinking how I should relish some sort of tart fruit with the nuts. Perhaps it was this thought that caused me to look about, and up over my head. Sure enough, there were wild fox grapes hanging so near that, with a very little pulling on the vine, I got them down within my reach. And then I had a "picnic" indeed on nuts and grapes. A few minutes later a nutting-party came in a large wagon, from the city. I scraped acquaintance, and told them where I had seen some beautiful large nuts shaken down by the wind. These friends assured me that I could easily find the artesian wells, for one of them was close by my road as I would come into the city. The city stands on quite a little elevation, and this first artesian well is on a flat by the side of the river. An iron pipe, pretty nearly as large as a stove-pipe, reaches three or four feet above the surface of the ground. From this pipe comes a beautiful little circular waterfall, making a crystal vase, such as I have before described, except that, in this case, the volume

of water is so great that the crystal sheet is nearly an inch through. The water is caught in a circular reservoir, and then passes off in quite a good-sized stream along the side of the road, and down to the river; in fact, it has spread in some places so as to make quite a quagmire; and I think the citizens of Clinton should be able to send a man with a spade, so as to let this water off without making mud-holes where it is not wanted. The water is, I should judge, nearly soft, and of that same crystal clearness that comes from most artesian wells. I had been so long drinking bad muddy water from imperfect wells or pond-holes along my way that I greatly relished the change.

I was told, however, by different people, that the largest and finest artesian well was at the other end of the city. It was much like the first, except that the water is carried up perhaps ten or twelve feet high. I presume it usually forms a most beautiful waterfall; but the wind blew so much the day I was there, it was scattered a good deal out of its appropriate reservoir.

Below I give you a cut showing a faint glimpse of the great hotel, and the flowing well at the foot of the broad staircase leading to it.



ARTESIAN WELL AT CLINTON, MO., FLOWING A MILLION OF GALLONS OF WATER PER DAY.

The volume of water is so great that it forms a pretty little artificial lake—a lake large enough, indeed, to contain a little steamer for pleasure-parties, and quite spacious buildings have been put up for bathing and other purposes. I clip the following from a descriptive circular:

We have here an artesian well flowing one million gallons every day, of white sulphur water, which glistens in the warm sunlight like a tear framed in a smile, and which is equal in health-restoring and health-giving properties to any sulphur water in the world. This well feeds a beautiful lake which affords fine boating and bathing, and which is well stocked with game fish.

The water from this largest well is impregnated with sulphur to such an extent that it shows the white milky filaments (so often seen in sulphur springs) adhering to the stones and gravel in the bottom of the stream where it goes out into the lake. The sulphur is too strong to make it agreeable to drink; but, like other waters of this class, it has quite a reputation for its medicinal qualities. The third well is much like the second one described, only smaller in volume, and this is used for the city waterworks.

Mr. M. L. Bonham and Mr. H. P. Faris, the latter being the gentleman who originated the idea of boring at Clinton, Mo., have kindly furnished me the following additional facts as below, in regard to their famous artesian wells:

THE FAMOUS WHITE-SULPHUR ARTESIAN WELL AT CLINTON, HENRY CO., MO.

This is one of the most wonderful wells in the world, and was the result of drilling commenced by a local company in search of gas or oil, July 8, 1887, at the depth of 325 feet a slight flow of sulphur

water was struck; continuing to a depth of 400 feet, a very strong flow was gained, equaling, probably, about half a million gallons per day. An eight-inch bit had been used to this depth. From there the bit was changed to 5½-inch, and drilling continued to a depth of 800 feet, tapping several veins of magnificent water without any evidence of sulphur in connection therewith.

Both waters are now flowing together, and the analysis herewith shows that, for certain diseases, such as kidney and stomach trouble, blood disease and skin eruptions, these waters are a sovereign remedy. The flow is estimated to be in excess of 1,000,000 gallons every 24 hours. It is largely used in connection with the city waterworks system, as well as for hot and cold baths, in bath-house proper, for boating, fishing and swimming in the lake supplied by the overflow from the well.

The supply seemed to increase the further down they went. The most of the distance was through a very hard white flinty rock. By inserting a pipe, the flow diminishes very rapidly, and at about 30 feet high it ceases altogether.

The following analysis of the water has been furnished by Mr. Arthur Winslow, State Geologist, who has calculated both as parts per 1000 and as grains per gallon of 131 cubic inches.

| SOLIDS. | Grains per gal. of 131 cubic inches. | Parts per 1,000. |
|----------------------------|---|---------------------|
| Potassium chloride..... | 1.85 | .0317 |
| Sodium chloride..... | 62.32 | 1.0653 |
| Magnesium chloride..... | 4.40 | .0752 |
| Calcium chloride..... | .08 | .0014 |
| Magnesium carbonate..... | 6.45 | .1103 |
| Calcium carbonate..... | 10.26 | .1754 |
| Calcium sulphate..... | 9.12 | .1561 |
| Silica..... | .68 | .0117 |
| Total solids as found | 95.61 | 1.6271 |
| GASES. | | |
| Carbonic acid..... | 10.23 | .1741 |
| Hydrogen sulphide..... | .24 | .0048 |

Now, unless I come across bee-keepers, or somebody who knows of me, so I can get acquainted a little, I often, in these travels of mine, have a strange feeling of homesickness. I, for one, do not enjoy the feeling of being a stranger in a strange land, and somehow or other I get to thinking at such times that I am away off where nobody knows me or cares for me; and I get to wondering whether I am not, in one sense, leading a sort of tramp life, leaving the boys at home to bear the burdens, and rambling about where I am not wanted or needed or called. I had this feeling considerably while at Clinton. I had seen all the wells, and I felt in a hurry to get home, or to get to Lebanon, where Mrs. Root and my relatives were waiting and watching for me. I finally decided this was an unmanly spirit, and a wrong spirit. I shook off the feeling, and stepped into the door of the pumping-station whence water was sent over the city. I did not feel much like talking, but I felt it a duty to make an effort, at least, to be sociable.

"My friend, don't the people of Clinton object to drinking water with this strong sulphurous taste and odor?"

"Oh! no, sir; for you must understand that the water flows from the well into this large high reservoir. After standing here a few days, exposed to the air, the taste and smell are all gone,* and it is simply pure water, almost soft."

*The friends will remember that, while at the hot springs in Arizona, I got hold of the theory that the heat was caused by the waters of two or more springs, containing different chemicals, mixing together somewhere in the interior of the earth. Well, this theory was considerably upset at San Jacinto, where I found them running the hot water into a large tank to let it cool off so it could be used for drinking, etc. Now, the hot water tastes strongly of chemicals; but after it had been exposed to the air, and had become cold, it was simply common spring water. Well, here in Clinton, Mo., we find the

After this we had quite an animated talk; and when I found him so willing to show me his machinery and tell me all about it, and these wonderful wells, I forgot my homesickness, and really began to feel that I was not only "A. I. Root," but that I was indeed "Brother A. I. Root."* When I told him where I lived, and my name, there was another of those big surprises that so often startle me. Said he:

"Why, Mr. Root, you must surely stop a little while and see my father. He lives right up there by the great standpipe. He is not only a bee-keeper, but he has a greenhouse, and is quite a gardener. He used to take GLEANINGS, but I believe he does not just now; but notwithstanding that, he will be very glad to see you."

Perhaps one thing that made me homesick was, that I was needing one of my naps. So many days wheeling over the hills and rocks was beginning to tell; and after I had shaken hands with friend Bonham I begged the privilege of lying down for fifteen or twenty minutes before I visited very much. In fact, at such times it is almost impossible for me to visit, even if I try. I wanted to make Deepwater before dark, and so both nap and visit were necessarily short. I found friend Bonham not only a bee-keeper, florist, and gardener, but a real Christian gentleman; and I was sorry to be obliged to make my stay so brief. Of course, I inquired about the bee-keeper at Deepwater, but he could not recall the name. He said that, while I was taking my nap, he would be sure to think of it; but I suppose he was much like myself—names get away, and sometimes they won't get back, no matter how hard you beckon and call. I had to start off on my wheel, without knowing the name of the friend who had given me the courteous invitation given in the letter at the commencement of this. Before I reached Deepwater, night came on; and in going down a hill, and across one of the bridges mentioned in the letter, I had another fall. But this was my last one on the Missouri trip, for I decided I should have to stop riding at night unless by moonlight.

Deepwater looked very pretty and inviting to me—especially the lights of the little town did, after my wheelride in the thick darkness. After supper I made inquiries for the bee-keeper whose name I could not recall; but nobody seemed to know just such a man. Several kept bees, but they did not take GLEANINGS. Finally, when I heard church-bells ringing, I gave a boy a nickel to show me the way, and I was soon seated in a Presbyterian prayer-meeting. The old feeling of loneliness came on, but it quickly gave way when a young man who sat beside me put out his hand and said a friend of his once induced him to read the A B C book clear through. His name was Hess, and he said it was a great pleasure to him to see face to face the man who wrote that book. The friend who loaned it to him was a member of their church, and was very rarely absent during the evening prayer-meetings. He offered to take his horse and buggy, and go with me in the morning to see him; but it was back in the opposite way from which I wished to go; in fact, I had passed his home in the darkness of the night; and, besides, as nearly as I could

strong sulphurous taste also disappears after the water has been exposed for a sufficient time to the air. Now, then, the chemicals that make the water hot, as well as those that give it the sulphurous taste and odor, seem to be volatile gases that disappear when exposed to the air. I wish somebody who is versed in this department of science would set us right in regard to the matter.

*See page 918.

gather, the man who wrote me the letter lived at *Brownington*, on the road to Lebanon; and I felt as though I did not dare to take another hour, else I should not be able to reach my destination Saturday night. At *Brownington* I found a Mr. Stevenson who was a bee-keeper; but he did not write the letter. Perhaps I may explain now, that, when I got through, I pulled the letter out of that pocket, and was greatly chagrined to find that it was from the friend of Mr. Hess, whose home I passed in the night about the time of my fall, and whom I missed once more because he happened to stay away from the regular prayer-meeting just one night.* How queerly do things sometimes turn out!

In order to save time I wanted to take a bee-line across the country, to Lebanon. But men who had been over the road shook their heads; and just as I was starting wrong somebody told me there was a great river ahead, with no bridges. When I came into the beautiful little place of *Osceola*, the county seat of St. Clair Co., I found the *Osage* River large enough to carry a good-sized steamboat. I felt a little glad I had listened to the advice of those who knew what they were talking about.

At about this point I began to be greatly pleased to discover I could lie down and take a nap right before an open window, even with a strong breeze blowing right in my face. The outdoor exercise had so far cured me of chills and every thing of that kind that I often slept thus for half an hour, *covered with perspiration*, right in my shirt-sleeves, and with my head uncovered.

In many of the country places where I stopped, the people were in poor and humble circumstances. At one point there was a little rain—enough so I stopped and chatted with an old lady who was spinning with an old-fashioned spinning-wheel. I was in a hurry to go on, but she said she thought I would get wet. I suggested that I could find a house on the road if it rained very hard. She replied, however, that I would not pass another house on the road till I had gone about *seven miles*. A little explanation may be necessary here. The roads through those *Ozark* Mountains are mostly on the ridges, unless it becomes necessary to cross a stream. Well, although the ridge is the best place for a road, it is not the best place for *farming*, and accordingly farms are from a quarter of a mile to a whole mile off the road and down in the valleys. You can not see the houses, because the road crooks around through the scrub-oak, and is oftentimes little more than a cowpath.

After I left *Osceola*, people were greatly surprised to see a man on a wheel. If somebody happened to look out of the window and see me, I usually discovered, by looking back, that the whole family were out by the road watching me until I was out of sight. The horses, cattle, and other domestic animals, were also greatly frightened by the wheel. The cows (and mules too) generally have a cowbell on the leader of the herd. Well, every little while a whole drove of horses or cattle, or sometimes both, would break into a regular stampede, and go off down into the valley, as if they had seen an apparition. I could judge of the rapid-

ity of their movements, and the distance they went, by the demoralized jingling of the cowbells. When I got further out into the region where there were no railroads, it was almost impossible to pass a team without dismounting, they were so liable to become unmanageable. In these wild roads, riding horseback is the most common; but although the riders often assured me pleasantly that they could manage their steeds, urging me to go ahead, I generally had to dismount. I remember that, at one place, where I finally succeeded in passing a team, a little yellow dog was following behind the wagon; but when he caught sight of me he turned, and ran and ran as if he thought the whole of pandemonium was coming. Finally he decided to stop and take another look; but this second look, however, seemed to be worse than the first, for he ran until he came to a cross-road, and then up the cross-road he went as if possessed. The last I saw of him he was peering over the top of a hill to see if I were safely out of sight.

I tell you, there is a wonderful contrast where you go through a country where the people and animals have become somewhat accustomed to wheeling. Well, through this wilderness I did not always find places for sleeping and eating, such as I had been accustomed to. Now, I am not complaining, mind you; for these good people tendered me the best they had, and oftentimes refused to take any recompense unless I tendered it to the children. When I explained at one place that I needed a little rest, and would like to lie down a few minutes, the good woman said I would have to climb a ladder to get into the loft. I asked permission to raise the window, for I can seldom sleep without a great plenty of air. She replied, "Oh! you won't need to hist any winder, stranger. I reckon you'll find all the air you need, without any of that."

Sure enough, the holes through the shingles and siding were so numerous I was quite happy in that respect, without any trouble on my part. One afternoon, however, I longed for a nice clean room, and for a meal of victuals where dishes and food would be so clean that I would not be sickened by the sight, taste, or smell. Now, this is all the complaining I am going to do in this line. Had I not wandered off into regions where people seldom go, and where good hotels would not pay expenses, I presume I should have never needed to use such a sentence. Well, when I came to the pretty little town of *Wheatland* I found just what I had longed for. A neat-looking building in the edge of the town attracted me, for it had a sign up as hotel. The building was well painted, and clean. The porch in front was clean. A pleasant, well-dressed young woman answered my summons. She gave me a room where I could lie down for my nap, with spotless-looking bedding, window-curtains, and every thing in keeping. She opened three windows to give me plenty of air; and she gave me a lunch after my nap, that, while it was not expensive, made me feel happy and thankful. The tablecloth was clean and whole. The dishes were not cracked, and they were as free from dust and dirt as they are in my own home. Last, and not least, there was an air of gentility and refinement and culture that was as refreshing as the drink of pure water that I got from that first artesian well. O woman! do you realize how much it is in your power to make this world of ours a very garden of Eden to the tired and thirsty soul, instead of a wilderness of disorder, filth, and woe?

At *Wheatland* I made some inquiries in regard to my best route to Lebanon. The lady of the hotel told me to hunt up Dr. Fisher, as

*How many times I have regretted giving way to the temptation of the moment, and absenting myself from prayer-meeting! and how often, when I have almost decided not to go, something has happened that I would not have missed for almost any thing in the world! but I can not remember in all my experience that I ever regretted going; and it is a little singular, too, to think how many blessings, sometimes strange and unexpected ones, have come to my heart in prayer-meeting.

he could tell me all about it. I found him at the postoffice. Quite a crowd gathered around the wheel to examine it, and they expressed astonishment when I told them I had come on it all the way from Kansas City. Then the doctor undertook to advise me.

"Look here, stranger, you will have to let me think about it a little. Let's see. If you were going on a horse, I should say take the shortest cut over the steepest hills and roughest roads; but if you had a buggy or a cart, I would advise you to go around by Hermitage. This would be about six miles further. Now, the question is, will your new-fangled vehicle come nearest to horseback riding or the buggy? I rather think the latter; therefore I would advise you to go around by Hermitage. You will find many pretty fair stretches of road, where you can make the six miles extra in a very little time."

By the way, what nice people these country doctors are! They probably get pay for a good deal of the advice given, as well as for their physic; but do they not, as a rule, do a vast deal of good in any community without pay or any thought of it? May God speed and strengthen the family physician—especially those in country places! and may he give them wisdom and discretion in putting in less physic and more advice to the little flocks that are depending upon him!

One wonders why a town, especially a county-seat, should have the queer name of Hermitage. Did some hermit make this spot his abode in earlier days? or was it named in honor of Andrew Jackson ("Old Hickory"), whose old home in Tennessee was called the Hermitage? Well, it is a rather pretty county-seat after all, though the place is small. I came into the village from the west; but before I could reach the public square I was obliged to follow a bad stony road clear around to the north, until, in fact, I turned clear around and went a little way westward to get into the town that had been in sight for some time. I afterward found that a very steep cliff and a river at the base made this circumlocution necessary. In this part of Missouri they have no bridges. In fact, I have been told that there is not a bridge in LaCade Co. I think there can not be many, if any at all, in Hickory Co. I found the people very courteous at Hermitage; and one of the boys told me there was *one* wheel in the town, but nobody had yet learned to ride it.

I reached Hermitage a little before sundown on Friday night; but as my next day was to be the hardest one of the whole trip, I decided to push on as far as I could before darkness stopped me. They told me I would have to ford a river just outside of the town; but a crowd of small boys volunteered to escort me past the river. In the deepening shades of night the dark waters looked treacherous; but I picked out the longest-legged boy in the crowd, and gave him a nickel to wade through before me. By standing on tiptoe, with the wheel across my shoulders, I managed to keep my pantaloons from getting wet after I had rolled them up to the very highest notch. I rather think my wheel-riding has developed my muscles to a little more than their usual size, and that was why I could not get my trousers rolled up any higher. After a little talk with the boys I bade adieu with God's blessing, and put in my best licks toward shortening the fifty or sixty miles between myself and Lebanon.

A great deal of my route was now through the wilderness. A good deal of the time the narrow cowpath roads were so full of fallen leaves that I had to guess at my path more or less. The crushing of the dry leaves under the

rubber tires, and the tinkling of the cowbells, made me feel glad, even though few people or houses either met my view. Just as I came into the little town of Plad I was surprised to hear boyish voices and roars of merriment. In a field near by they had gathered to play baseball. Some one saw me first, and uttered an exclamation. The boys stopped their game, and began to give deafening cheers for the new method of locomotion that came upon them like an apparition. I joined in the laugh, and returned their "howdy'es" as I passed by; but before I was out of sight it began to seem to me that their yells were not all of them in a friendly strain. The town of Plad is composed of three buildings—a general store, a dwelling-house, and some sort of warehouse. There may have been more buildings, but I do not remember them now. As soon as I alighted from my wheel a crowd gathered around it as usual, for the baseball players had caught up with me by this time. I arranged for taking a brief nap, and went out to bring in my wheel. But new comers were constantly arriving as the news spread, and it seemed a little hard to take it away from the crowd. The storekeeper said he guessed it would be perfectly safe if left out there; but when I had finished my nap, perhaps twenty minutes later, I was surprised to see it not only standing alone, but there was not a man, woman, nor child visible. I concluded they had probably gone back to their ball game; but I felt a little misgiving as I mounted. I felt of the tires. They seemed all right; but before I was out of sight of the store I knew mischief had been done. The bystanders were likely hidden somewhere, and they could see me, but I could not see them, and they were watching to see me go down. I decided, however, to disappoint them if I could. One of the tires got softer and softer, but I managed to get down the road into the brush; then I took my wheel out into the bushes away from the path and changed the tires. When I reached Lebanon I found *seven pinholes* to be cemented up. I do not suppose these people knew it was a \$50 fine for puncturing a tire. Perhaps some urchin was curious to see whether it really was "wind" that kept them inflated. I decided once not to mention this one piece of discourtesy I met during my whole trip; but afterward I thought it might be a valuable caution about leaving wheels for any length of time among a crowd of boys. I afterward learned that there was a rather hard set around this little four corners away back in the wilderness of Dallas Co.



And they straightway left their nets, and followed him.—MATT. 4:20.

And they immediately left the ship and their father, and followed him.—MATT. 4:22.

Ever since that automatic little greenhouse across the street from where I write was made, I have contemplated replacing the loose sashes, which covered it, with permanent rafters and glass. You see, by this means we get much more light; and loose sash are only a temporary affair after all. A big wind blew off a lot of them last winter, and it cost me several dollars to get them back. My trip to Missouri, however, delayed the work, and I gave it up. But the more I looked at that little greenhouse, where every thing grew

"from the word go," and never a failure, the more I wanted some large panes of glass, supported by permanent cyprus rafters; so, just for the fun of it, I went to figuring up how it could be done. I found I had rafters enough by using some old ones. By the way, I want to say a good word for the cyprus sash-bars made by the Lockland Lumber Co., Lockland, O. When our machine-shop was built, four years ago, about a dozen were taken from a greenhouse, and hastily thrown down under the eaves. To protect the cellar from frost, sawdust was piled over the rafters, and there they were, over four years, exposed to winter's snow and sleet, and summer's sun. But, come to get them out and sweep them off, they were almost as straight and sound as the new ones that had been stored away in the warehouse. We waited for Indian-summer weather; but a good many of you know it did not come for two or three weeks. I made a nice pattern of the way I wanted the sash-bar cut, including some nice and complicated framing, both at the top and bottom of the twenty-foot stick. Then our friend "Art," from the saw-room, set his machinery so he cut the whole 28 exactly like it. Then friend "Iper," from the paint-shop, gave them all two good coats of paint, including the top and bottom strips, which were 28 feet long. Holes were bored in the rafters, where they were to be nailed with great spikes to the plates of the greenhouse, every six feet. Finally a day came when I thought I could start the work outdoors, even if it was pretty cold. The greenhouse boys — "Frank" and "Fred" — were quite ready to follow me, and my framing and planning all seemed to work to perfection. We had set two rows of glass and part of another. They were butted together with thick paint between the edges. The tins were driven home with a machine made for the purpose, and I was just showing the boys how to run on the liquid putty and afterward to sift on the sharp white baked sand.

Let me explain to you why we were anxious to rush the work. All of my hot-water pipes were exposed to the weather. When it went down to only 15 above zero about the middle of November, the only cover for the greenhouse consisted of some old cotton sheets. They were rotten already; and the snow, sleet, and fierce wind flapped them about so much that the hot-water pipes had been frozen once, and I feared the consequences of another such blizzard. While I had my hands and head full in directing the boys how to do the work, somebody raised up the dirty flapping cotton sheet and saluted me thus:

"Is this indeed Bro. A. I. Root?"

My hands were sticky with liquid putty; and my old clothing, worn specially for the occasion, was pretty much in the same predicament, and I really felt as if I hadn't time to say "how d' do?" to anybody, let alone shaking hands and visiting. Something must be said in answer to this question. I was A. I. Root, sure enough, without any doubt; but about the "brother" part, it seemed to me there was a little uncertainty. My visitor was dressed in military costume. He was a very bright, attractive-looking young man, and he seemed so delighted to see me that I hastily rubbed the putty off my fingers, fished my dirty silk handkerchief from the pocket of my soiled overcoat, while I told the boys to go ahead the best they could. I found the new friend to be Fritz Malan. He is an Italian, and has kept bees in sunny Italy. In fact, he was an enthusiastic reader of GLEANINGS, and an admirer of your humble servant when General Booth came near his home and called him to join the Salvation Army. An interesting letter will be found in

GLEANINGS for 1889, page 622, from his pen. Our young friend was devoted to his bees, and was doing well; but when the light of the gospel of Jesus Christ shone down in his heart he straightway left bees, home, and all his possessions, and followed the general. He is now his private secretary. When they came to Cleveland, however, Malan petitioned for just a few hours to go down and visit the Home of the Honey-bees, and call on his friend A. I. Root. This latter personage has a reputation, as you know, of being somewhat of an enthusiast in "the kingdom of God and his righteousness," as well as in bees, gardens, strawberries, greenhouses, etc.

I have before spoken of the Salvation Army. I knew a little of General Booth, and of the enthusiastic reception he was getting, not only from the great cities of the United States, but from the great cities of the whole world. I told friend Malan that I had planned to go and hear General Booth when he came to Cleveland; but here I was, full of business and worldly cares, and had even forgotten the appointment. The boys were already coming to a standstill. I turned my young friend over to John and Ernest, to have them show him the hospitalities of our establishment, and made arrangements as best I could to have the boys finish covering the greenhouse alone if the next day should be mild enough. I suggested to the young Salvationist, that, if a big wind should come up when the glass was half on, it would probably blow my greenhouse all to pieces; but notwithstanding, I thought I would take the chances and go with him on the train that would leave in a little more than an hour. I can not remember exactly the answer, but it was something like this:

"No, no, Bro. Root; the greenhouse will not blow to pieces, and I think you will find that the boys will manage tip-top while you are gone. I know by experience that it is sometimes a pretty hard matter to let every thing go, and follow the call of Jesus Christ; but I know, too, that he that loseth his life for Christ's sake shall find it; and that he that forsakes houses, or brethren or sisters, or father or mother, or wife or children or lands, for his sake, shall receive a hundredfold, and shall inherit eternal life." I do not think that my friend put in those words exactly, but it was something to that effect. We are all familiar with the Bible teaching in that respect. "Seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you."

When he started for Medina he did not think he was going to be able to take me back with him; but he seemed greatly delighted to have me stop my work and give him so much of my time. During our trip on the cars he unfolded something of General Booth's industrial work among the outcasts of the great city of London. He told me of the 2000 acres that had been given him, of the number of poor people to whom he had given employment, and had enlisted in the Salvation Army. He told me about the lost women whom General Booth set to work raising strawberries. Then he quoted an answer the general gave in one of his talks to somebody who, like myself, asked him how it was possible that their institution could go on without the general there to manage it and direct. Now, this answer, mind you, is second hand, and it may be quite different from the general's own words; but the idea was something like this: General Booth replied that the secret of his success was because of the many helps he had received. England gave him 2000 acres. The poor people whom he had saved from sin and ruin gave their time, or, at least,

they told him he could pay them whatever he could afford. Help came from different sources. When he wanted the wherewith to fertilize the ground so as to grow good crops, the city of London gave him stable manure free of charge, and even drew it to his place; and finally, said he, the great God above gave his *only begotten Son*. Is it any wonder that the project had succeeded? My informant told me further that they furnish a meal of victuals to these poor outcasts, for only 3 cents! I remonstrated a little at such an exceedingly low price; but I found out later that this meal was mostly a quart of rich soup; but I know by experience that a man can do a great deal of work on such a meal. Furthermore, a night's lodging was furnished for a penny. I suppose this lodging consisted of shelter and a shelf to sleep on. Bath-rooms are also fitted up so a good bath could be taken for a penny. You see, all hands are working for Christ Jesus, and therefore the expenses are easily kept down.

When we stepped off from the cars I soon discovered that friend Malan had *other* brothers than myself. When he was too far away for a hand-shake he gave them the army salute, and responses came from every direction. I wanted to see his people out on street parade, and he hurried me along so we might not be late. In order to make the shortest cut he made inquiry of a stranger. The stranger recognized his uniform, and asked him some questions about the meeting. Mr. Malan seized the opportunity, and in walking just a few blocks the stranger became deeply interested. When their paths separated, such earnest words were spoken that the stranger desired to continue further. Now, I do not know for certain that a soul was brought into the ranks in that short walk of ten minutes, but it looked very much like it.

We were just in time for the parade. The music was inspiring. The men, and the women too, who marched in the streets that sloppy night looked to me like saints sent from above to plead with lost humanity. I preferred not to sit on the stage, but to be down among the people. My friend placed me on one of the vacant seats in front. There was some remonstrance, but he shook his finger in token that I was not to be troubled. But others noticed me, and he finally gave me a little card on which was penciled:

FRITZ MALAN.

Ufficiale nell' Esercito della Salvezza,

(Secretary to Gen. Booth.)

Please give bearer front seat.

The Italian words mean, "Officer in the Salvation Army."

This card proved sufficient to allow me to keep my seat. Mr. Ballington Booth, son of General Booth, took charge of the meeting until his father came on to the stage. The younger man has a military bearing, and is a man of commanding presence. The music, like that on the street, was of a kind to awaken one's best emotions and resolutions. I never thought that the tamborine was very much of a musical instrument until that evening. Near me was a mere child who seemed full of music from the tips of her fingers to her very toes; and the way she handled the tamborine made me fall in love with the people and with the instrument. The principal singer, whose name I have forgotten, was an Englishman. He was of about the dimensions of Dr. Miller, and his singing reminded me many times of that of our jolly friend. By the way, I want to tell Dr. Miller right here to take the first opportunity to hear and learn some of the hymns of the Salvation Army. This English singer seemed

to me to be the first individual I ever met who could combine eloquent oratory with the grandest kind of music. He exhorted sinners to turn from the world, singing it so slowly that he had time to encourage new converts as they came up the aisles, by brief, encouraging words interspersed between the words of his music, and yet the melody was not marred a particle. Why, you could hear the music going on, even when he was not uttering a sound. He seemed to have a rare gift of tossing the melody above his head, as a sleight-of-hand performer would pitch balls, and then when it came back he simply gave it a pitch and kept it going. His voice was powerful, however, and he put his whole strength into it. He had spiritual strength and a winning way, as well as physical strength.

Fifty or sixty converts came forward that evening. One whole family came in response to the eloquent pleading. As I had no badge nor uniform, every now and then some of the workers would whisper in my ear, "Dear brother, have you given your heart to Jesus?" or some similar words. The great Music Hall was full. I was told that some two or three thousand were in attendance. They were mostly from the humble walks of life; but they evidently had followed the spirit of the text I have quoted. Christ Jesus was first. Many of them were humbly attired; but that seemed to make no difference. It was not only brother and sister in word but in spirit. I learned to love the gentle words and expression in the voices of the men-folks, even though some of them were colored people. I learned to love, too, the sweet spiritual look that beamed from under the queer bonnets worn by the women-folks, even though many of them were well along in years, and perhaps would not be called at all good-looking by the world at large. A peace seemed to pervade their hearts and faces that was not of this world. "My peace give I unto you. Not as the world giveth, give I unto you."

After the meeting closed, it was my privilege to have a little chat with the general in his private parlor. He was as deeply interested in strawberries as bee-keeping, because such industries promise a chance for him to give employment in that London home for outcasts. He said he had found great trouble in finding something to do for the lost women who had joined the army. He could not well put them into families, and many would object when they came to find out in regard to their former lives. He had succeeded nicely, and made it more than pay expenses in setting them at work on strawberries; but the latter could not be grown the year round. I invited him to call at our establishment; but he said that the demands on his time were such that it was impossible. He is well along in years, and I am afraid that he is being overworked, as he speaks to audiences two or three times every day, and addresses meetings of ministers in almost every city besides. The *Morning Star*, of Boston, Mass., makes the statement that he is "general of the largest army in the world, the head of a civilization of redeemed sinners, the central influence of a brotherhood out of every nation."^{*}

When I got home, twenty-four hours later, I was surprised to see more than half of my greenhouse nicely covered, although the weather had been so very cold that I did not think the boys could work. In fact, three experienced men in glazing had tried and given up; but my two boys, Frank and Fred, are so hardened by being almost constantly exposed in the open air

^{*}In the *Morning Star*, issue of Nov. 8, will be found an excellent account of Gen. Booth, his work, and the Salvation Army.

that they took hold of the glaziers' tools and finished the whole house themselves, when it was too cold for anybody else to work. It is now a thing of joy to at least *three* people, for it does not leak a drop. Fred and Frank learned the trade of setting glass, and got a present from their employer as a recognition of their skill and endurance.

"And they straightway left their nets, and followed him." Did they make a mistake in so doing? and are you ready to do as much? Let me whisper to *you* the words that have been ringing in my ears ever since that evening—the words of that sweet-voiced woman who whispered so gently to me, "Dear brother, have you ever given your heart to Christ Jesus?"



LETTUCE-GROWING IN GREENHOUSES.

Now is the time to begin to push things in growing lettuce under glass. I am satisfied that the very best manure is fresh horse manure, with all the coarse straw sifted out. Break it up fine with a lath or strip of board, or, better still, pour it down on the ground and let the chickens scratch it over and pick out the seeds and undigested grains. Of course, they will spread it over a good deal of ground in a little while; but if you give them a nice clean place you can soon sweep it up again. Now make up your beds, spading (or, rather, *forking*) clear down to the bottom; or if in a greenhouse right on the ground, spade down to the yellow earth. Chop it up fine with a rake; then sift, so as to get the coarser particles at the bottom, and finally spread your manure over the surface of the beds an inch or more in depth. Now chop it in thoroughly, so as to mix it completely with the fine sifted soil. Water it just enough; put on your bottom heat, if you have any, and then wait until every weed seed has germinated before you put in your lettuce-plants or sow any seeds. In this way you will save a big lot of finger-weeding. When the seeds and grains in the manure have all germinated, chop it all over once more with your sharp steel rake, then rub the surface smooth with a strip of board, killing the weeds and fining the soil; and then cover the surface of the beds *once more* with half an inch of tobacco dust. Now put in your lettuce-plants, 7 inches apart from center to center, and you will have little if any trouble with weeds, because the lettuce will soon fill the ground, and the tobacco dust will effectually cut off all bother and trouble from the green fly, snails, and any other enemies of this kind. This fresh rank stable manure is worth more for rank foliage, in my opinion, than any other fertilizer in the world. Real old-fashioned guano might be a help, but I don't believe anything else is worth bothering with.

HIGH-PRESSURE GARDENING IN CALIFORNIA.

Mr. Root:—When I read your article, "High-pressure Gardening during dry Weather," I had to smile (audibly). Well, it was in regard to that remarkable peach-orchard, where you said that "some of the young growth had grown 18 inches or 2 feet." Said I to my wife, as I leaned back from the table, "We can beat that all hollow out here." So with tape-line and ten-foot pole in hand I went out into the orchard to measure a peach-tree which was set out in the spring of 1893. I don't remember the

time, but perhaps it was in March. I put out several at the same time, and they are all nearly the same size now. They were all dormant buds when set out, and, of course, have grown from the ground. The one I measured was exactly 9 feet and 8 inches high, and the branches were 8 feet and 6 inches across. The circumference of the trunk 4 inches from the ground was a little over 10 inches. In July, about 16 months from planting, this tree ripened 14 as nice Early Crawford peaches as I ever saw, measuring from 7 to 9 inches. You no doubt will say this is a California story; but I can assure you it is no uncommon thing to have Salway peaches from 9 to 11 inches.

And now since I am telling California stories (true all the same) I want to speak about some pumpkins I raised last year near the roadside (without irrigation), which attracted much attention and comment. One evening, when three men were passing I told them I would give either of them the largest one in the patch if he would load it on his cart without help. So the first man, whom we will call No. 1, after vainly trying several times, gave it up. You see, it is not so much the weight as the shape. No. 2 approached with much confidence and kneeled beside the monster, and, after many efforts, finally succeeded in rolling it up into his lap, and from there to his shoulder; but when he tried to rise with it he also failed, and let it roll off, amid the laugh and jeers of those around. Now up comes No. 3, with face beaming with radiance and expectation, and, after getting his second hold on it, he succeeded in picking it up and carrying it some 30 feet, and landed it successfully in his cart and drove up town and ascertained its weight to be 140 lbs. These men were all large and stout. I had one in another patch which tipped the beam at 168 lbs.—from the seed of one that weighed 173 lbs. the year before. I also raised, last year, without irrigation, some very large sweet potatoes, one hill producing 35 lbs., and one potato which weighed 15 lbs., and was smooth and perfect in shape. It was sent to the Midwinter Fair at San Francisco, but there were others there still larger.

Yes, the way we do it is by thorough cultivation and very little water, and often *none* from the time the seed is put in the ground until harvest. This year is an exceedingly dry one, and we have had to irrigate more than usual. Last winter's rainfall was less than 8 inches—none falling since December—yet there is plenty of corn which will make from 30 to 60 bushels to the acre, with only two irrigations.

Fruit of all kinds has been a good crop and of No. 1 quality.

One more, and I will quit. I raised Muscat grapes 3 inches in circumference, from vines set last year—the same variety we make raisins from.

T. L. HOLLOWAY.

Whittier, Cal., Oct. 1.

[Very good, friend H. I am prepared to believe all you say, for I saw similar results in favored localities; but I saw also a great deal of poor, shiftless slipshod farming in California. In fact, I am inclined to think that such crops as yours are the exception. You did not tell how much those big pumpkins and sweet potatoes were worth for cooking. The boys were just telling me that they are having difficulty in selling the large sweet potatoes we get from Baltimore. They say customers keep picking out the smaller ones. We can not equal you in peaches and peach-trees, it is true; but a friend of mine—a brother of the one who has the peach-orchard I told you about—said he had just sold some Salway peaches, raised on his own Medina clay soil, that brought readily \$1.25 per half-bushel basket; and that, too,

right in the neighborhood of where they were grown. We can not all go to California; but we can get good prices here at home, with first-class fruit, and have lots of fun in doing it.]

MUSHROOMS; THEIR TARDINESS IN COMING UP.

Mr. Root:—The mushroom spawn I received of you last spring and planted in March is just coming up. The mushrooms are large and fine, but come up very slowly. I suppose it is because of the cool weather. Now, if you think it would be of interest to others, please tell how to keep the spawn in the bed over, to plant new beds with next spring. Can you not give us some good way to cook the mushrooms also?

A. I. TOMBERLIN.

Phillipsburg, Kan., Oct. 19.

[Friend T., my impression is that it will not pay you to undertake to produce mushroom spawn or seed; but perhaps it will come up itself year after year where you have already grown it. Its tardiness in coming up is one of the perplexing things about the vegetable.]



In view of the business change spoken of elsewhere editorially, all claims up to date due A. I. Root should be paid, of course, to the A. I. Root Co.

CARLOAD SHIPMENTS.

Prospects for trade next season, so far as we can judge this early, are fair. We have entered orders for two carloads of our extra polished sections, one of them for export. As we go to press we are loading the first car for Florida, and this will be followed by a car to the Rawlings Implement Co., Baltimore, Md., or Baltimore Farm Implement Co., as their old name reads. Others are sending large orders, and taking advantage of the early-order discounts. Our 1895 catalog is developing slowly but surely. We hope to have it completed soon after Jan. 1, 1895. We have decided to reduce the size to 40 pages, and include only bee-keepers' supplies, and will make a separate list of the miscellaneous household articles.

HONEY MARKET.

We have no change to report in prices of honey. Demand is slow with us, especially for comb honey. We have but 12 cases of extracted alfalfa left from the Reno car, and little prospect of getting another supply. There is lots of choice alfalfa honey in Colorado, but it costs more than twice as much to get it from there to Chicago as it does from California to any point east. It is, therefore, impossible to allow the producer a fair price and still deliver it here low enough to compete with honey produced in Wisconsin and New York and elsewhere. We still have a good supply of alfalfa comb honey, very nice, and will make special prices on large lots. Let us hear from any one interested.

We have choice clover and basswood extracted honey in 60-lb. cans, at same prices as quoted in our last.

A NEW EDITION OF GOSPEL HYMNS.

When Gospel Hymns Nos. 5 and 6 were first issued, the publishers said they would not be bound with the first four numbers. I presume the demands upon them have been such that they have receded from this position, for they have just brought out a new edition, comprising all the hymns and tunes in Nos. 1 to 6 inclusive, without duplicates, bound in cloth. Price, postpaid, \$1.20; by express or freight, at purchaser's expense, \$12.00 per doz., or \$1.00 each. We have to offer nearly all the other editions of Gospel Hymns as follows:

Gospel Hymns consolidated, Nos. 1 to 4, large-type edition, words and music, board cover, 75c each, \$8.50 per doz.; postage 10 c each.

The same, words only, board cover, 20c each, \$2.25 per doz.; postage 2c each.

The same, small-type edition, 45c each, \$5.10 per doz.; postage 5c each.

The same, small-type edition, words only, limp cloth, 10c each, \$1.15 per doz.; postage 1c each. The same, paper cover, 5c each, 58c per doz.; postage 1c. Gospel Hymns No. 5, words and music, board cover, 30c each, \$3.40 per doz.; postage 5c each.

Gospel Hymns No. 6, words and music, board cover, 30c each, \$3.40 per doz.; postage 5c each.

Gospel Hymns Nos. 5 and 6, words and music, board covers, 60c each, \$6.80 per doz.; post., 10c each.

Gospel Hymns No. 6, C. E. edition, words and music, board covers, 35c each, \$4.00 per doz.; postage 5c each.

VALUABLE BOOKS FOR CHRISTMAS GIFTS.

We have just received from the Charles Foster Publishing Co. another shipment of their beautiful family books drawn from the Bible, of which we have sold so many during past years. We have room here for but a brief announcement. If you have back numbers of GLEANINGS on file you can find fuller descriptions written a year ago. The first and most important is—

The Story of the Bible, by Chas. Foster. Half a million copies of this work have been sold, and it has been reprinted in many foreign languages. It is a handsome cloth-bound book, 5½x8½, 1½ thick, weighing 2½ lbs., with 700 pages and 300 illustrations. Price \$1.00; by mail, \$1.20.

Bible Pictures, and What They Teach Us, is another most fascinating book for a child, and is at the same time elevating and ennobling in its effect upon the child's mind. It is 8x10, by 1 inch thick; weighs nearly 3 lbs.; contains 315 beautiful Bible pictures, with brief sketch, comprising 232 pages. Price \$1.00; by mail, \$1.22.

Story of Bible Animals is another in the series. Same size, and at same price as Story of the Bible.

First Steps for Little Feet, by the same author, is a book for young children, and a great help to mothers and teachers in imparting Bible truth to the little minds; 328 pages, 140 illustrations. Price 50c; by mail, 57c.

Pilgrim's Progress, Illustrated, is a handsome book by the same publishers. Size 7½x10, and 1½ inches thick; 420 pages and 170 illustrations; beautifully illuminated cover of red cloth, embossed in gold. Price, plain edges, 75c; gilt edges, \$1.00. By mail, 21c extra.

Fables and Allegories, or, New Lights on Old Paths, is another beautiful gift-book by the same publishers. It contains 512 pages and 350 illustrations. Size of book, 1½x7½x9½; weight 4 lbs. Has light-blue cloth cover, embossed in black and gold; has gilt edges, and makes a handsome and valuable gift-book. Price \$1.50; by mail, \$1.82.

These prices are about two-thirds of the regular selling prices of these books; and yet for every subscription to GLEANINGS you send us, with \$1.00 paid in advance, you may deduct 25c from the price of any of the above books you may select. Your own subscription will count if you send another with it, and both are paid up, but not otherwise.

ORDERING POTATOES NOW, TO BE SHIPPED WHEN YOU DIRECT IN THE SPRING.

We shall once more undertake to send out potatoes as we did last spring, but I do not think we shall again risk starting them before the first of April, no matter how enticing the weather. You will need to order the potatoes now, at the prices given on p. 885 of last issue. You must either pay for them now, or make a sufficient payment on them to pay us for putting them up and furnishing cellar space for them till next April. Or we will ship them sooner providing you will stand all loss from freezing. In other words, they are to be shipped April 1 unless you direct them sooner. At the very low rates we have given, we shall very likely run out of many kinds before spring; but if they are put up now, your name marked on them, "paid for," you make a sure thing of it. We guarantee them wintered safely without freezing, and with no more sprouting than can be prevented by an excellent cellar made on purpose, and opened and closed according to the weather, that they may be neither too hot nor too cold.

Lathyrus sylvestris has stood several severe freezes—one of them only 15 above zero—without being hurt a particle.

Unparalleled Offers.

TWO PAPERS FOR THE PRICE OF ONE,

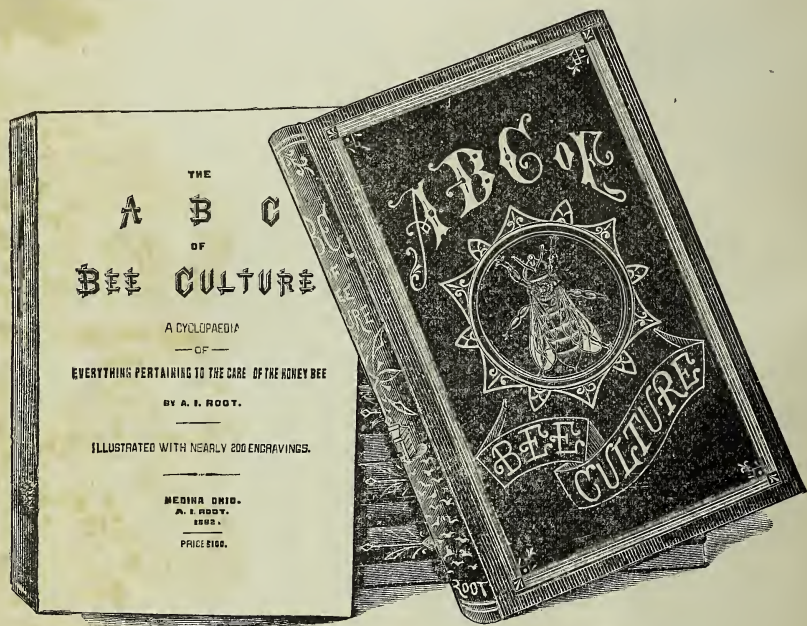
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A B C of Bee Culture Thrown in at Half Price.

We have for several years made special clubbing rates with the *Farm Journal*, Philadelphia, Pa. As an agricultural monthly we don't believe there is another that will compare with it. It is pithy, pointed, and practical. The regular subscription price is 50 cents; but we are able to give a year's subscription free on the following conditions: Send us \$1.00 to renew your subscription before the time paid for is up. If you are in arrears for GLEANINGS IN BEE CULTURE you must pay up to the end of this year and for a year in advance, when you will be entitled to the *Farm Journal* for a year also. If you secure a new subscription to GLEANINGS, and send \$1.00 for the same, you may have the *Farm Journal* a year to pay for your trouble, or you may have it sent to the new subscriber if you wish. All new subscriptions to either paper will receive the rest of this year remaining after your subscription is received, and all of next year.

This offer is good only for this month of December.

After this month the club price will be \$1.10; and to those who are in arrears for GLEANINGS, the best club price is \$1.20, unless all arrears are paid and a year paid in advance.



Desiring to close out quickly the present edition of the A B C of Bee Culture, we have decided to make this very liberal offer: We will bind up these books in heavy tinted parchment cover, very strong, and, in addition to above offer, we will give one copy free postpaid for 55 cents additional, or the cloth-bound book for 75 cts. additional. If you prefer the *American Bee Journal*, *Review*, or *Canadian Bee Journal*, instead of *Farm Journal*, you may have any one of these one year with GLEANINGS one year, and the A B C in parchment cover, for \$2.30; or with cloth cover for \$2.50; or you may have any one of the 50-cent bee journals, *Progressive Bee-keeper*, *American Bee-keeper*, or *Nebraska Bee-keeper*, with GLEANINGS one year, and the paper A B C, for \$1.80, or cloth-bound \$2.00. If you will secure for us a new subscriber to GLEANINGS at \$1.00, to send with your renewal, you may add to any of the above offers 75 cents net for the new name. If you send two subscriptions besides your own (one of which must be new), and all paid in advance, together with \$3.00, we will send free postpaid a cloth-bound A B C to the one sending the club, but no other paper or premium will be included. For one new subscriber sent with your own renewal, and \$2.00, we will send free the paper-bound A B C of Bee Culture. Could you ask for larger return for a little effort? This edition of the A B C which we offer on these liberal terms was printed in 1890-'91, and an appendix with all the latest developments was added last year, so that it is almost up to date with the edition now in the press, to be completed next spring.

This is a rare chance to get one of the most valuable text-books on bee-keeping anywhere published. More than 50,000 copies of the book have been sold during the past 15 years since it was first issued. No other bee-book ever published has reached any thing near such a circulation as this. We have but a few hundred copies to offer on the liberal terms given above. You will do well, therefore, to take advantage of one of these offers without delay.

The A. I. Root Company, Medina, O.